Presidential Address

ON

THE EVOLUTION OF ANTISEPTIC SURGERY AND ITS INFLUENCE ON THE PROGRESS AND ADVANCEMENT OF BACTERIOLOGY AND THERAPEUTICS.

Delivered at the Seventy-first Annual Meeting of the British Medical Association on July 28th, 1903,

BY T. D. GRIFFITHS, M.D. LOND., M.R.C.S. ENG.,

PRESIDENT OF THE ASSOCIATION.

LADIES AND GENTLEMEN,—I have chosen for the subject of my address the evolution of antiseptic surgery and its influence on the progress and advancement of bacteriology and therapeutics and the further practical application of our knowledge for the benefit of mankind. This subject is no doubt full of interest to us all, but it is far too extensive to be treated fully in the short space of time in which I have the honour of addressing you.

In the first place, I must ask your indulgence to bear with me for a few minutes in reminding some of you of the practice of surgery as we witnessed it in the best London hospitals some 40 years ago. There are probably many of the younger members of the profession who have no conception of the condition and state of things in surgical practice even at so recent a period. During my student days in the latter end of the "fifties" and early "sixties" the large wards of our hospitals were filled with all sorts of cases indiscriminately—simple and compound fractures, suppurating joints, traumatic, senile, and hospital gangrene, erysipelas, septicæmia, pyæmia, and cases operated on for accidents and diseases, all of which were dressed by the same attendants. Each ward had its set of sponges for the purpose of dressing wounds and these were used indiscriminately for the various cases under treatment. There was no such thing as absorbent cotton wool in those days and great economy was observed in the use of lint. Linseed meal and charcoal poultices were frequently employed to sweeten and to cleanse wounds and to encourage healthy suppuration. "Laudable pus" was a sign of good dressing and healthy action. The operating theatre was often crowded with students from the dissecting-room, and at the operations the great surgeon invariably wore, with evident pride, the same old black frock-coat, buttoned up to the chin, which was kept ready for the occasion in the anteroom and which was well stained and saturated with blood and discharges. It is unnecessary to give a detailed account of the operations, but I may mention that the sponges which were used in the wards were also used at the operating table. Stout silk ligatures were employed to tie the blood-vessels and were left hanging out of the wound to be pulled at from day to day until they were separated by the process of suppuration. I well remember listening on one occasion to a clinical lecture on pyæmia which was delivered by the senior surgeon of a London hospital who confessed to the students that the causation and vagaries of pyæmia were inexplicable. To illustrate this remark, he reminded his class of a strong, healthy young man who had been admitted into the hospital for a trifling accident and who died shortly afterwards from pyæmia, while a middle-aged, drunken, abandoned woman in the adjoining ward was convalescent after a serious operation.

The dawn of antiseptic surgery was now not far off. Schwann's discovery of organic germs in the air led Pasteur to formulate a theory that fermentation is never excited except under the influence of microscopic organisms, and, further, that each particular organism sets up a peculiar species of fermentation. In 1861 Pasteur published the result of his researches on fermentation and in 1863 he demonstrated that putrefaction was caused by minute organisms suspended in the air. Prior to this oxygen had been regarded as the agent which produced it. Lister, now aided by the result of Pasteur's researches, devoted his talent and energies to solve the problem of inflammation and its attendant suppuration in wounds. He was not long in arriving at the conclusion that it was due to bacterial action—putrefaction—and he naturally evolved the idea that if putrefaction of blood serum and destroyed tissue in wounds could be prevented nature would repair the parts much in the same way as she does in cases of simple fracture. He applied this principle to the treatment of wounds in his practice in the surgical wards at the Glasgow Infirmary and afterwards in Edinburgh, using carbolic acid as his antiseptic agent.[1] At the annual meeting of this Association held in Dublin in 1867 Lister communicated to the world the result of his investigation and clearly enunciated the principles of antiseptic surgery which we recognise and practise to-day. Naturally the practical application of these principles has since been gradually modified and improved. The use of the carbolic spray, which was at first a prominent feature of Lister's method, was gradually discontinued. It was found very inconvenient in practice and not so necessary as had been anticipated and it was finally renounced by Lister himself in 1887. When the spray was given up greater attention was paid to the purity of the atmosphere in the hospital ward, and more especially in the operating theatre, and of the instruments and dressings. Then, by a natural transition, attention was turned to the possibility of asepticism, with the view of discarding antiseptics at operations and for the dressing of wounds. After some experience, not a few argued that the acme of success in surgery could be attained by the proper use of aseptic means. There is no doubt a great amount of truth in this but not to the extent claimed by the advocates of asepticism. It must be admitted that the purest air which we can obtain in the operating theatre contains micro-organisms and some of these must alight on the surface of exposed wounds. Fortunately, there is far less danger of septic action being set up by micro-organisms floating in the air than by those which are conveyed to the wound by a foreign substance. The reason of this is probably that the pathogenic micro-organisms suspended in the air are less numerous and, as a rule, less active than those which rest on solid or liquid substances. When no antiseptic lotion or swabs are used the aerial micro-organisms settling in the wound are left to the digestive cells or phagocytes to be disposed of. In ordinary circumstances and with proper aseptic precautions they are able to do so; but it cannot be denied that this delegation of trust to the cells, coupled with the possibility of imperfect sterilisation of the skin and materials used at the operation, involves greater risk of disasters (such as are not unknown to some of us) than when antiseptic means are also used. We must be careful that the pendulum does not swing too far to the aseptic side. It is at all times a difficult matter to guard the surgeon's work effectually by means of sterilisation against every possible access of pathogenic micro-organisms. Why should one trust to asepticism alone when the position can be made impregnable by the assistance of antiseptics which are practically harmless to the healing process? It is therefore evident that the acme of safety is secured in operative surgery by the judicious application of the two principles advocated and practised by Lister. The architect has been very rightly called into service to further the practical application of Listerism. This is especially to be noticed in the construction of modern hospitals and in the addition of new operating theatres to old institutions. They are invaluable in surgical work. Some 36 years ago the mortality from major operations in the London hospitals was about 33 per cent. This high mortality after major operations is now reduced to about 3 per cent., and after minor operations practically to *nil*, as the outcome of Lister's antiseptic principles.

NURSING INSTITUTIONS AND SURGICAL HOMES.

We are now doing, with the aid of public charity, all that science up to date can do to help the poor. Let us now consider for a moment what has been done, what is being done, and what should be done, to meet the requirements of the middle classes for medical and surgical aid in time of need. Their own homes, or perhaps lodgings, are often unsuitable for operative surgery or for serious medical cases requiring skilful nursing. There are, it is true, many surgical homes in our large towns but which are, with very few exceptions, mere private ventures for profit, many unworthy of recommendation. I may, perhaps, be allowed to inform you very briefly

[1] Carbolic acid was used for some time in this country in a diluted state to preserve pathological specimens before Lister introduced it as an antiseptic agent in the practice of surgery.

what provision we have at Swansea for paying patients and for nurses. We have a dual institution—a nursing institute and a surgical home in one. This institution is supported to a very small extent by public subscription. It is managed by a small committee elected by the subscribers and is worked by a resident matron. The nurses are allowed practically all the privileges of a coöperative nursing institute and receive all their earnings with the exception of the incidental expenses of the home. The public is in this way supplied with efficient nurses whose training and character are guaranteed by the institute. The house adjoining, and communicating with the nursing institute, is provided for paying patients who are attended by their own medical men. The tariff varies from three to five guineas a week according to the requirements of the patient.

Although differing from it in some details, the main principle of this dual institution is the same as that of the Home Hospital in Fitzroy-square, London, which was established by Sir Henry Burdett some 26 years ago, and which is now managed by a registered association without profit. Dual institutions, of the kind we have at Swansea, provided with a Listerian surgical home equipped with all the necessary modern appliances, are very much needed in towns to replace many private nursing institutes, some of which are now flourishing by imposing, on the invalid public, women imperfectly trained as nurses, who are engaged at low wages to be let out on hire like cab-horses for gain, and also to replace many of the so-called surgical homes which are totally unsuitable for operative surgery. Self-supporting institutions of this kind must be started in our country by public subscription or by the beneficence of individuals. A certain number of subscribers should be enrolled to elect a committee of management or to form an association, certain advantages being assured for the subscribers. The public would in this way provide for itself a nursing institute and surgical home at minimum cost, with all the advantages of a Listerian hospital, equipped with every modern appliance, and every patient would be able to employ his or her own medical man. As soon as the institution has become self-supporting the small amount of subscriptions contributed for the purpose of securing a trustworthy committee of management and any profit made should be allowed to accumulate for the purpose of extension or the improvement of the building. No party feeling should be allowed to interfere with the management and one or two medical men, elected annually or biennially, as representatives of the profession in the district, should act on the committee of management. I make this suggestion advisedly, as all the medical practitioners in the district would be more or less interested in the institute. It would be wise to avoid every possibility of friction or jealousy in the working of an institution of this kind, which is for the benefit of the public as well as being a great convenience and advantage to the local practitioners.

BACTERIOLOGY AND IMMUNITY.

The brilliant discoveries of Pasteur and the evolution of antiseptic surgery by Lister gave a great impetus to the study of bacteriology, with the result that new and unexpected discoveries were made as to the part played by bacteria in nature. We now find that these micro-organisms have a definite and important place in the scheme of nature. They are distinctly separated by gradation from both the vegetable and animal kingdom. They form a kingdom of their own which we may term the "bacterial kingdom." Their very existence appears to be antagonistic to both animal and vegetable life. Their main object in nature is evidently one of destruction—the breaking up of complex molecules of animal and vegetable substances into simpler combinations. They are nature's scavengers and undoubtedly they are the causal agents of all the communicable diseases to which flesh, and not human flesh alone, is heir.

The varieties of bacteria, differing in size, form, action, character, and power for good or evil, are almost endless. The bacteria with which we are familiar measure from 1μ to 5μ = $\frac{1}{25000}$th to $\frac{1}{5000}$th of an inch. If each bacterium measured $\frac{1}{10000}$th of an inch in length and $\frac{1}{25000}$th of an inch in breadth it would take 250,000,000 of these micro-organisms to cover one square inch of glass. These micro-organisms grow with great rapidity—a bacterium may reach maturity and divide or split into two in 20 or 30 minutes. If it divided into two every half hour it would produce a colony of over 16,000,000 in 12 hours. It has been shown in the laboratory that the growth and rapidity of reproduction and the character of bacteria depend upon their surroundings and that their virulence may be attenuated or increased according to circumstances. It is therefore evident that the law of evolution and involution of the animal and vegetable kingdoms applies also to bacteria. Supposing that the evolution of a new species of plant—say an annual—takes 336 years, then if the law is equally applicable to micro-organisms a bacterium in favourable circumstances would take only one week to run through 336 generations, provided it took only 30 minutes to reach maturity and division, and so a new species might be thus rapidly evolved.

I wish also to remind you, for the purpose of my argument, of the important fact that a bacterium may have two states or stages of existence. One is the active or vegetative stage and the other is the spore or resting stage. In the latter state, which may be compared to that of a hard nut or seed, it may remain dormant for a long time until the surroundings favour its development into the active state. This, as I shall show, has an important bearing on the treatment and etiology of specific diseases. Pasteur's and Davain's discoveries led up to Koch's investigation. Davain discovered bacteria in the blood of animals suffering from anthrax in 1863, thus confirming the observations made by Pollender in 1849. Koch repeated the experiments and finally established in 1876 the causal relationship of bacteria and disease. Tuberculous disease had been proved by Villemin to be inoculable and in some countries it had long been believed to be infectious, but it remained for Koch to demonstrate in 1882 that tuberculous disease was due to the agency of a micro-organism. He proved that a bacillus played a part in the production of tuberculosis which is analogous to that which is played by torula cerevisiæ (yeast bacillus) in fermentation. The tubercle bacillus feeds, grows, multiplies, and produces its toxin at the expense of the surrounding tissues very much in the same way as the yeast bacillus feeds, grows, multiplies, and produces its toxin (alcohol) at the expense of the saccharine solution in which it is placed. The principle discovered by Pasteur in the processes of fermentation and putrefaction was proved, after years of close investigation by Koch, to be absolutely identical in the development of tuberculous disease in the animal body. He demonstrated the bacillus in the tissue and cultivated the organism outside the body and observed the formation of the toxin. The same remark may be applied to diphtheria (diphtherisation). The diphtheria bacillus grows, feeds, and multiplies on the mucous membrane and there forms its toxin. If we compare the processes of fermentation, tuberculisation, and diphtherisation a little further we may gain an idea as to the nature of immunity which is far more rational than any of the numerous and complicated theories and suggestions already proposed. After a certain stage of fermentation the torula cerevisiæ (the fermenting agent) ceases to act, it becomes inert, and falls to the bottom of the vat. Tubercle bacilli and other pathogenic bacteria behave in exactly the same manner. After a certain stage of crowding and production of toxin they become inert and are at last practically killed by their own poison. The same thing happens in the overcrowding of animals. When yeast has ceased to perform its functions in the vat the alcohol (fermentation toxin) which it produced, if not protected artificially, is attacked by another bacterium, the germs of which are always at hand, and it is soon reduced to vinegar, which possesses different properties. Even if more must is added to the vat the acetic acid fermentation will continue. It is well known that the toxin produced by one bacterium can be destroyed or metamorphosed by the action of another. Advantage has already been taken of this power by sanitarians for the disposal of sewage, aerobic and anaerobic bacteria being called into service to do the work desired. When the pathogenic bacteria are destroyed by their own poison and when this poison in its turn is metamorphosed into a simpler compound by other bacteria, in the same way as alcohol is changed into vinegar, the patient is convalescent and as long as the spores of the second bacteria remains in the blood the patient is rendered immune[2]; but if the toxin of the first pathogenic bacteria has been removed by the leucocytes or destroyed by the oxygen of the red blood corpuscles, or, in fact, digested, or if the spores of the second set of bacteria are no longer retained in the circulation or tissues of the body, the patient has no immunity. When the germs which secure immunity become

[2] Rheumatism produces immunity to tuberculosis and vice versâ.

attenuated the immunity is lessened and when they are destroyed the immunity is lost for the time.

In convalescence after diphtheria the toxin, which may be called for convenience sake "diphtherin," is no doubt metamorphosed and its toxic character is destroyed by another ferment, and the new or metamorphosed product may be called "met-diphtherin." As long as the met-diphtherin or its causal agent remains active or dormant it confers immunity on the individual body which it occupies. Diphtherin antitoxin is the met-diphtherin obtained from the blood of the horse, which confers immunity on the human subject. When this is used at an early stage of diphtheria it damages the vitality of the diphtheria bacilli and reduces their diphtherin to met-diphtherin which is harmless. Pasteur demonstrated that when grapes are ripe in October a large number of the berries and their stems have their skins covered with spores of torula cerevisiæ ready to develop under favourable conditions. This happens immediately when the grapes are crushed and the solution is kept at a proper temperature. He also demonstrated that yeast can be weakened (attenuated) by nursing it in a weak solution of sugar until eventually it is unable to cause any fermentation. We may also study with advantage the processes of sporulation and vegetation of yeast cells, which are analogous to those of pathogenic bacteria. By the process of sporulation the yeast cell contracts and hardens like a grain of corn and retains its vitality in this condition for months or years. The same is also true of pathogenic bacteria which exist either in the state of vegetation or sporulation.

Professor G. Sims Woodhead pointed out at our annual meeting last year that diphtheria bacilli may remain dormant in the throat for months. This is an important fact worth remembering, inasmuch as it may account for anomalous outbreaks of acute specific disease.

Considering the rapidity with which bacteria grow and attain their maturity and multiply, and considering how easy it is to attentuate or to increase their virulence, it is logical to infer that the process of evolution may be brought about very quickly, as has already been pointed out. It is therefore natural to infer that, under favourable conditions, bacillus coli communis may be developed into bacillus typhosus, both being alike in size, shape, and appearance, and the so-called pseudo-diphtheria bacillus into diphtheria bacillus, which are also alike in appearance, &c. Like the ripe grapes with germs of yeast in the dust on their skins and the surface of their peduncles, we also have germs of specific diseases about us which only require certain conditions to develop them. The late Sir James Paget, in his memorable address at the International Medical Congress in London in 1881, dwelt at some length upon the importance of studying the physiology and pathology of plants to help the advance of knowledge of human pathology. Nature always works on definite plans but with ever-varying difference.

THERAPEUTICS.

Both bacteriology and Listerism have greatly helped to advance our knowledge of the action of medicine. Therapeutics have now been raised in many departments from the plane of empiricism to that of science. Peruvian bark, the active principle of which is quinine, was accidentally discovered to be of great value in the treatment of malarial fever. The discovery was the result of observation, but the knowledge gained was entirely empirical. Prior to the discovery of the hæmamœba and the observation of its action on the red blood corpuscles, and until the Listerian property of quinine was ascertained, we had no idea how the drug acted as a curative agent. It is now evident that it acts simply as an antiseptic in destroying the malarial parasites which are conveyed to the human body by mosquitoes, and it is now very doubtful whether it has any other beneficial action as a therapeutic agent. The world is greatly indebted to Sir P. Manson—whose name we were glad to see in the last Birthday Honours list—and to Major R. Ross for their discovery of the part played by mosquitoes in the causation of malarial fever.

Very much the same remarks may be applied to salicin, salicylic acid, and the salicylates, which are powerful antiseptics. The discovery that these drugs were specially valuable in the treatment of rheumatic fever was accidental also. It is now acknowledged that rheumatic fever is due to a micro-organism which probably gains access to the circulation through the tonsils or mucous membrane of the pharynx. Sore throat is a frequent precursor of acute rheumatism. It is probable that scarlatinal sore throat predisposes the patient to infection by rheumatic micro-organisms, over which the salts of salicin have a lethal action.

Mercurial salts are the most efficient antiseptic agents we possess in surgical practice and it may be argued that the therapeutic action of mercury, when administered internally, is to be accounted for, to a great extent, by its antiseptic property; hence its specific action on syphilis, which is now stated to be a bacterial disease. It has been recognised for many years that mercury is a valuable remedy in tonsillitis which is also, no doubt, caused by micro-organisms. Dr. Jamieson of Edinburgh pointed out some years since[3] that mercuric chloride is most valuable as a bactericide in the treatment of scarlet fever. Arsenic, like mercury, a valuable remedy, is a powerful bactericide. It has been stated lately, on very good authority, that it is useful in the treatment of tuberculosis. It is well known as a most valuable remedy in malarial diseases. Its lethal action on other micro-organisms, which we have not yet discovered, may account for its therapeutic value in the treatment of anæmia, pernicious anæmia, skin diseases, and degenerative changes which are attributed to "premature old age." It is possible, and very probable, that micro-organisms are active agents in the production of atheromatous changes in the vascular system. We now acknowledge that the deposit of tartar on the teeth is the product of certain bacteria; even the gouty deposit in various tissues of the body should probably be credited to some as yet unknown bacilli. In any case, the facts before us are sufficient to justify the suggestion as a working hypothesis. Iodine is another powerful antiseptic agent and a cell stimulant favouring absorption of exudative and inflammatory products; as it possesses these two properties to a high degree and is readily tolerated by the animal economy it ranks among the most useful remedies we have in our Pharmacopœia. Iron may act as a powerful antiseptic remedy indirectly. In cases of anæmia it improves the condition of the red blood corpuscles which are the carriers of oxygen in the animal economy.

The most approved local treatment of skin diseases, as well as those of the mucous membranes, may be briefly stated to be a judicious use of antiseptics alone or in combination with some sedative or stimulating agent as the case may require. All the useful remedies we employ in the treatment of inflammatory trouble of the genito-urinary passages are antiseptics and although the amount which is passed by the urine is very small and much diluted, yet it is sufficient, within a certain limit, to destroy by degrees the offending bacilli. This gradual process of destroying bacteria can be imitated in the laboratory. The virulence of bacteria can be attenuated by growing the organism in the presence of weak antiseptics and can be weakened also by injecting certain chemical substances along with them into the animal body. All conditions which are unfavourable to the growth of bacteria attenuate their virulence, render them innocuous, and finally destroy them. Sunlight and the Roentgen light are fatal to bacteria. The open-air treatment of consumption, which is a combined aseptic and antiseptic treatment, is an illustration of the value of light, pure air, and ozone. The effect of heat and cold on bacterial life is a most interesting and important subject. Every species of bacterium has its latitude of temperature in which it can flourish, a few degrees above or below being fatal. Bacteria differ in their power of resistance to the toxic action of antiseptic agents. Tubercle bacilli are readily destroyed by iodoform, while other micro-organisms flourish in it. Even mercuric chloride solution of moderate strength does not kill all bacteria equally quickly. Time will not permit me even to enumerate, much less to expatiate on, all the antiseptic agents which we have now at our command. We now see that Listerism is as valuable in the practice of medicine as it is in surgery.

PUBLIC HEALTH.

The practical application of our knowledge for the benefit of the public health has not kept pace with the great progress made in medicine and in surgery during the last 36 years. The Public Health Act of 1875, which was very comprehensive and well conceived, has been of great service in improving the sanitary condition of urban and rural districts; but in spite of the amending Acts, and in spite of the Local Government Act of 1894, it is now clear that both the law and its administration are defective in many points

[3] Brit. Med. Jour., 1887.

and the time has come when both should be improved in order to secure for the public the full benefit of the advance recently achieved in the science of hygiene by bacteriology and the principles of Listerism. Thus, while it is true that every urban and rural sanitary authority is required to appoint a medical officer of health, the duties and salary of the officer are left to the discretion of the local authority, except in those cases in which part of his salary is repaid by the Local Government Board. Rural sanitary authorities are generally satisfied with very little more than the exercise of their power of electing their officer and the fixing of a small salary. The officer, who is as a rule a local practitioner, is allowed to limit his own work as he may think proper; and as the tenure of his appointment is precarious he is naturally disposed in the performance of his duties to interfere as little as possible with individual interests; practically, he has no power to correct matters which come under his notice. A few months since a conscientious medical officer of health confessed, in a letter which appeared in the *British Medical Journal*, that he was paid about £50 a year for doing nothing. The principle of action which he had to observe was "how not to do it." The medical officer's reports consist principally of statistics—the number of births and deaths per 1000 living, the number of deaths from acute specific diseases, &c.—which are, no doubt, very interesting and instructive, but these details could, and should, be supplied to the board of guardians by the registrar of births and deaths. It would be far more to the point if the medical officer of health were allowed or required to report how many houses were badly drained, how many houses were unfit for human habitation, &c. Speaking generally, the appointment of the medical officer of health in a rural district is very little better than a farce and waste of public money.

Now it may be argued that sanitation in rural districts is of comparatively secondary importance since in the country there is plenty of space and pure air; and that, in fact, the mortality in rural districts is lower than in the country as a whole. But there are many fallacies in such a line of argument and I propose to direct your attention to one. It has become too much the custom to gauge the sanitary state of the country by the general death-rate; a decline in the rate has, perhaps, tended to blind us to facts which lie a little below the surface. It is true that during the last 30 years the annual death-rate of all ages in England and Wales has fallen from 22·25 to 16·3 per 1000 living, a gain of about 26 per cent.; but the death-rate of infants under one year of age has risen nearly 2 per cent., while the birth-rate has diminished. Nearly half the children born are dead within five years. Increased infant mortality and diminished birth-rate are two ugly facts which are not to the credit of our country or of modern civilisation. The increased mortality among infants is due to diarrhœa and enteritis and we find that the increase due to these two causes is seven times greater in towns than in the country. We also find that the mortality from diarrhœa is much greater among infants artificially fed than among those who are fed at the breast alone or in part. No doubt much of this increased mortality is due to the ignorance and carelessness of mothers and nurses, but it is also an illustrations of a defect in our sanitary administration due to the optional character of the Acts and regulations already referred to. There are in existence model rules and regulations for the cleanly and sanitary conduct of dairy farms which, though they have been approved and sanctioned by the Local Government Board in England, are not adopted, or, where they have been formally adopted, are not enforced in rural sanitary districts. The medical officers of health of our great cities complain that owing to the neglect of rural sanitary authorities the milk supplied for consumption, especially in the poorer quarters of large cities, is often either decomposing or putrescent. The illustration which I have given shows that we must regard our system of sanitary administration as a whole and must not be content with enforcing sanitary precautions in the cities while neglecting their application in the country districts from which those cities draw their supplies.

Notwithstanding the defects in the administration of the Public Health Act the country is often under a debt of gratitude to sanitary authorities and medical officers of health for protecting our shores from the invasions of plague and cholera from time to time. The importation of plague to Glasgow and to the London docks a couple of years ago is still fresh in our memories and we have not yet forgotten the feeling of relief we experienced when we were assured that the causal agents had been destroyed and that we had safely escaped a terrible calamity. Great credit is due to the sanitary authorities for their promptitude, energy, and determination in the performance of their duty on these occasions. The same may be said of our local authorities generally when an epidemic of small-pox, typhoid fever, or some other infectious disease attacks a populous district. Unfortunately the public is apathetic in these circumstances; it must be hard hit and many lives must be lost before it wakes up to realise the situation and gives material help to the medical officer. We are indifferent and accustomed to the endemic and preventable diseases which are always with us, persistently destroying a large percentage of the population. This may be attributed to three causes: 1. The absence of a strong central authority. 2. The ignorance, apathy, and prejudices of the smaller authorities. 3. The objections and the loud protestations of faddists and conscientious objectors to vaccination, objectors to the Contagious Diseases Act, objectors to the advancement of medicine by experiments, &c.—a class of persons who, regardless of the consequence to others, claim freedom to do as they please in matters pertaining to health, freedom to do what is unjust and wrong, and freedom to endanger the lives of others.

And this is allowed in Great Britain, the land of liberty. Gentlemen, this is not liberty, it is undue licence and abuse of freedom. Liberty means freedom and security, freedom of action and security to person and property, and freedom of action with due regard for others. These conscientious objectors, of whom there are many species in the world, repudiate the conclusions and recommendations of our Commissioners. They claim freedom to break one of the Ten Commandments and they also disregard one of the great moral principles of Christianity; and, moreover, they are allowed to have a voice in the government of the country and considerable influence in Parliament. It is high time the country should be rid of this tyranny of faddism and ignorance which is responsible for the loss of tens of thousands of valuable lives every year. In obedience to the influence of democracy the tendency of legislation for many years past has been in the direction of decentralisation. Unfortunately this has been carried a little too far in the case of the Public Health and Local Government Acts. A healthy reaction is now much to be desired. The Sewage Commissioners, who are gentlemen of the highest abilities, have recently reported and have pointed out "the need of setting up a central authority." All the various committees appointed by the Local Government Board to consider and to report on questions relating to food, questions of preservatives, colouring matters, beer materials, and adulterations of food products, have made similar recommendations—namely, the necessity of setting up a greater central authority to secure intelligent coördination and direction and a satisfactory administrative control.

Here the matter ends. The recommendations of commissions and committees are put on one side. Questions affecting the health of communities and of the nation at large are presumably not urgent. Both Parliament and the country are more interested and concerned in trivial and sentimental questions of religious teaching in board schools than in the physical and mental development of our children. The Opposition, whichever party be in power, apparently prefers wasting the legislature's time in wrangling over a dispute between a set of recalcitrant quarrymen and their employer to devoting itself to an amending Act to secure better health, longer life, and greater comfort to the community for which it legislates. It is evident that the reform we need is greater central authority and greater power to county councils over public health administration within their respective areas, and for this purpose it appears to me that the following scheme would meet the case.

1. That the President of the Local Government Board should be raised to the rank of Secretary of State, on an equality with the Home Secretary, for the purpose of improving the status of the central authority. It is true that Mr. Long is a member of the Cabinet, but that is not due to the fact that he is President of the Local Government Board. There is, I understand, an agitation going on at present to establish a Ministry of Public Health. This at first sight appears to be the very remedy required, but on second thoughts it is evident that this would defeat its own end and prove a retrograde step. We must remember that the administration of public health in this country is almost entirely local and we must not forget that the local administrable business of the country, for which the Local

Government Board is trustee, and the business of public health are inseparable; it therefore follows that an independent Minister of Health would be in constant collision with the Local Government Board and the result would be friction and a deadlock.

2. (*a*) That the county councils and urban and rural sanitary authorities should be under compulsion to appoint medical officers of health who should be precluded from private practice. (*b*) That the county councils should also have power to compel the combination of small sanitary authorities into conjoint areas sufficiently large to secure the services of an efficient medical officer who must give his whole time to public health work. In short, a public health service should be developed to provide the efficient medical officers of health who are absolutely necessary. The service should be sufficiently tempting to induce some of the best talent in the profession to enter it. The young medical officers of health should begin their work in rural or less important districts, and be promoted, according to merit and seniority, to higher or more important posts with increased salaries. The appointment, in the first place, should be competitive, the tenure of office should be secure, and there should be provision for superannuation. The medical officers of health should have competent sanitary inspectors as at present, their duties should be specified, and they should have the power to carry out the work prescribed for them very much in the same way as responsible officers in other services. Every medical officer of health should be provided with a bacteriological and chemical laboratory and the services of an analytical chemist. Laboratories of this kind, properly equipped, which are now few and far between, would also be an invaluable help to general practitioners and specialists.

One of the duties of the medical officer should be to deliver popular lectures on sanitary questions and general hygiene in his district, for the purpose of educating the public on the vital importance of observing the ordinary laws of health. The sanitarian motto should be that which the late Lord Beaconsfield once gave to his party, "Educate—Educate—Educate." Although it is well to advocate the establishment of sanatoriums for the cure of tuberculous diseases it is far more important and much more logical to go to the root of the evil at once and to teach the public the importance of healthy houses, good drainage, proper ventilation, hygienic dressing, and wholesome diet. Prevention is better than cure. A moderate improvement in our present sanitary administration would, no doubt, result in a reduction of 1·5 per 1000 living in our annual death-rate. Supposing, then, that the population of the United Kingdom be 40,000,000, the saving of life would amount to 60,000 a year—a total of 1,200,000 in 20 years. A creditable asset even to the British empire.

Ladies and Gentlemen,—The object of the British Medical Association is to secure concord and fraternity, unity and strength, power to organise and to advance our knowledge, power to protect our own interests and to uphold the honour and noble traditions of the profession, power to promote and to keep a jealous watch over the well-being of the community and to educate them on all matters relating to health, both of mind and of body, and, finally, power to influence and to guide Parliament in legislating for the health of the nation. The possibilities of the Association are great; its influence, which is increasing year after year, will last as a living power in the country and remain a valuable legacy for the benefit of posterity. Although our profession is not a lucrative one it is honourable and heaven-born and we may have the satisfaction of knowing that we are doing noble and Christian work in our effort to cure disease and to alleviate human suffering. We may claim, moreover, that we live and labour to procure for the whole civilised world nature's choicest blessing—health.

PLUMBERS' REGISTRATION.—At the recent Congress of the Royal Institute of Public Health the following resolution, proposed by Mr. Francis Vacher, county medical officer of health of Cheshire, seconded by Dr. H. Scurfield, medical officer of health of the county borough and port of Sunderland, and supported by Mr. Alderman Coe, Halifax, was carried unanimously:—

That this 1903 Congress of the Royal Institute of Public Health held at Liverpool approves of the efforts made by the Worshipful Company of Plumbers in promoting the Plumbers' Registration Bill, believing that such a measure will be for the safeguarding of the public health and beneficial to all classes of the community and appeals to the Government to give facilities and support to the measure.

Address in Medicine:

INFECTIVE AND INFECTIOUS DISEASES.

Delivered at the Annual Meeting of the British Medical Association at Swansea, July 29th, 1903,

BY FREDERICK T. ROBERTS, M.D., B.Sc., F.R.C.P. LOND. AND CENSOR,

SENIOR PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL AND HOLME PROFESSOR OF CLINICAL MEDICINE, UNIVERSITY COLLEGE, LONDON.

MR. PRESIDENT, LADIES, AND GENTLEMEN,—It is just 45 years, Sir, since you and I left our native land and began our career as medical students at University College, London. Never in my wildest dreams could I then have imagined that we should meet on such a memorable occasion as this in the respective positions which we now have the honour to occupy. You are pre-eminently worthy of the dignity of being President at the meeting of the British Medical Association in Swansea, but it would have been very easy to fix upon many more deserving and far better qualified to deliver the Address in Medicine than myself. I am fully conscious that I owe my selection, in the first instance, to our long-standing personal friendship, and, secondly, to the fact that I am a Welshman having many friends and not a few old pupils among the members of the Association in South Wales. To you, Mr. President, and to all concerned I offer my cordial thanks and acknowledgments for inviting me to deliver this address, as well as to the council of the Association for accepting your nomination.

In an address of this kind it is some advantage nowadays if one can fix upon a definite period of time for contrasting the past with the present. There is a popular inclination towards centenaries, jubilees, and the like, and if I may be excused another personal reference it so happens that I can go back beyond the 45 years to which I have just alluded and can to-night actually and truly speak of my "jubilee" in connexion with the medical profession. I entered upon my apprenticeship in Carmarthen in 1852, which I can assure you was no mere sinecure but involved downright hard work. I take this opportunity of saying, however, that I have never regretted the time spent in that capacity, for the knowledge and experience then gained have proved most useful to me on many an occasion, not only when a student but during my subsequent professional life.

It has always seemed to me desirable that the Address in Medicine at the annual meeting of the British Medical Association should be devoted to some particular subject of more or less general interest and not savouring, so far as can be possibly avoided, of the absurd, irrational, and most mischievous "specialism" which is so rampant at the present day. From the very first, after I consented to deliver this address, I was for several reasons powerfully attracted towards the subject of "Infective and Infectious Diseases," to which I now propose to ask your attention, of course, entirely from a comprehensive point of view. It is one that appeals to the entire profession in all its different branches and, by no means least, to the "general practitioner." I well remember seeing most of the ordinary infectious diseases on a considerable scale when I was an apprentice, and I have a vivid recollection of serious epidemics of small-pox, cholera, and even typhoid fever which, however, we did not then identify. Looking back, it may be truly affirmed that this class of diseases illustrate in a striking manner and degree some of the most remarkable scientific and practical advances in medicine which have been achieved during the last half century; while the future promises further progressive developments the importance and value of which it is impossible to forecast.

SCIENTIFIC DEFINITION—ADDITIONS AND DEVELOPMENTS.

I may take it for granted that when the pathological factor or factors which directly originate a particular disease or group of diseases, about which there had previously been but vague theories and hypotheses, have been definitely recognised and their true nature established, we may claim that a distinct and important advance in knowledge has

been gained. This applies emphatically to the whole range of complaints with which I am now concerned, for the term "infective," according to modern teaching, has come to have a very precise pathological signification, founded on a scientific basis, and the outcome of the researches and experimental investigations of Pasteur, Lister, Koch, and their followers. To this doctrine the medical faculty generally, with but comparatively few exceptions, has given its cordial and uncompromising assent. It affirms that every infective disease is the result of the direct action upon the body of one or more living pathogenic micro-organisms or bacteria and in many instances it has been positively demonstrated that a specific organism is the cause of a particular disease and of no other. It must be clearly understood that according to this definition the term "infective" is not synonymous with "infectious," which implies that a complaint is capable of being communicated, either by direct inoculation or contagion, or indirectly in various ways, from person to person, or from some other animal to man. In short, an infectious disease must be infective, but an infective complaint is not necessarily infectious.

I need scarcely remind you that a number of contagious diseases have long been known to be due to obvious or easily demonstrable parasites, animal or vegetable, and it is interesting to note in passing that the investigations of recent years have added, and are still adding, to the list, of which actinomycosis may be cited as a conspicuous example. The organisms which we are now dealing with, however, are on an infinitely more minute scale and the profession as a body has to accept in the main what trained bacteriological experts tell us about them, their toxins, pathological effects, antitoxins, and other details. The theory of *contagium virum* is of very ancient date, but the positive demonstration of the nature of the so-called virus was only started and has been progressively accomplished well within the last half century, while the investigations which are still going on in all directions are adding daily to our knowledge and to the practical results following therefrom. These investigations, however, have shown that there are still not a few difficult questions to be solved and we must be on our guard against too hasty conclusions or generalisations on insufficient data. It is a remarkable fact that in the case of some of the most prominent infectious diseases with which we have long been familiar no definite or specific organism has thus far been recognised, at least so as to be acknowledged by competent and trustworthy authorities, and we cannot accept the alleged discovery of such organisms in individual complaints unless and until they have received the stamp of the approval of such authorities. At the same time we may be certain that they exist, and this fact may be accepted as the basis of a sound working hypothesis.

When we look back upon the history of medicine during the past half century, but more especially during recent years, we cannot avoid being struck with the additions which have been made to the group of infective and infectious diseases and with the way in which others, though previously known, have come so much more prominently to the front. The multiplication of these complaints has been partly due to the differentiation of diseases which were formerly regarded as identical as the result of careful and systematic clinical observation and post-mortem examination. It is, however, to the revelations of bacteriology that we mainly owe these additions which in the first place have brought all inflammatory, suppurative, and septic conditions within the infective group. Among special medical diseases coming under these categories which, according to modern views, are thus definitely classed as infective may be mentioned pneumonia, rheumatic fever, gonorrhœal synovitis, possibly rheumatoid arthritis, malignant endocarditis, certain acute throat inflammations, and different forms of meningitis. But, further, bacteriology has proved conclusively that several unsuspected complaints or morbid conditions are infective or even infectious, of which the most remarkable are tetanus, tuberculosis, and malaria. Influenza and diphtheria are striking examples of infectious diseases which seem to have developed into terrible scourges within living memory, though they are by no means new complaints, and their prevalence can be easily explained in the light of modern knowledge. Anthrax and glanders have come to the front because they illustrate in a remarkable way certain important points relating to the pathology of micro-organisms. Glandular fever, specially studied in this country by Dawson Williams, is an interesting addition to the acute infectious diseases. I have already alluded to malaria, and I wish now to draw special attention to the fact that the effects of this condition as well as several diseases always known to be infectious, such as cholera, dysentery, plague, and yellow fever, which originate and prevail chiefly in tropical or subtropical countries, and with most of which we as a nation had formerly little or no direct concern, have nowadays assumed a conspicuous prominence and have become of extreme practical importance. New diseases belonging to this category have also been, and are still being, brought to our notice, such as blackwater fever, Malta or Mediterranean fever, trypanosoma, sleeping sickness, and beri-beri. So important have they become that "schools of tropical medicine" have been, as you are aware, established in different places for those who need special training in relation to these diseases. The free intercommunication which now exists between Europe and tropical countries, many of them far distant, has brought these complaints to our very door, so to speak, and we are compelled to deal with them seriously and to do what lies in our power to cope with them. And more especially Great Britain as a nation cannot ignore these complaints, as many of the regions in which they prevail form an integral part of this vast empire. We are, I presume, most of us "Imperialists" nowadays, but in this relationship, at any rate in existing circumstances, no one dare be a "Little Englander." We cannot evade the responsibilities which the Imperialistic sentiment brings with it with regard to these terrible diseases, whether from the point of view of humanity and philanthropy; of trade, commerce, mining industries, or other remunerative enterprises in which this country is now so actively and widely engaged; of military engagements; or of Christian missionary work. In this connexion I cannot refrain from calling attention to the intelligent, far-seeing, disinterested, and truly patriotic efforts made by our distinguished countryman, Sir Alfred L. Jones, a native of Carmarthen, to promote the study of tropical complaints on the spot, as well as at the Liverpool School of Tropical Medicine, and to do all in his power to endeavour to diminish their prevalence and gravity, or even to exterminate them altogether.

PRACTICAL ETIOLOGY.

I now proceed to deal briefly with certain points relating to what I may term the practical etiology of infectious diseases. With this aspect of the subject all members of the profession, whatever their position or sphere of work may be, are unavoidably and deeply concerned; and there is hardly any branch of medicine in which greater or more beneficent progress has been made, thanks mainly to those who have worked in the various departments of public health and who have taken an active interest in sanitation.

Now the first question to be determined from the point of view of practical etiology is whether a particular disease is infectious in the true sense of the term or not. As I have already remarked, some affections have been in modern times definitely proved to come under this category which previously could not be so regarded on any scientific grounds, of which tuberculosis is a conspicuous example. The dogmatic statements made on this point about other diseases which seem to be undoubtedly infective, such as pneumonia and rheumatic fever, must, however, be received with caution until further and more extensive inquiry has been made, though in the meantime it may be well to regard them provisionally as infectious in certain circumstances and to act accordingly. At the same time we should not ignore or forget the ordinary causes which long experience has taught us are capable of exciting these diseases, such as chill produced in various ways.

In the next place, it is very desirable, with regard to each individual infectious disease, to have as definite a knowledge as possible concerning its period of incubation, the degree of infectiousness, and the period of infectivity—that is, how long infection lasts in a particular case. In relation to many of the best known affections belonging to this group these points have been now established fairly accurately, but there is still much to be done in this direction. As regards the degree of infectiousness, undoubtedly the gradations in this respect between different diseases are by no means so clearly recognised as they ought to be, even by the profession sometimes, but more especially by the laity, and consequently one cannot help being struck with the want of proportion and tendency to exaggeration exhibited in the way in which certain of these complaints are dealt with. For instance,

pulmonary tuberculosis is really nowadays looked upon by the large majority of persons as if it were a most virulent infectious disease, equal to small-pox or scarlet fever, which is, of course, absurd, but the idea has none the less got a firm grip and is doing an infinite deal of serious harm in different ways.

The most important and striking advance which has been made in relation to the practical etiology of infectious diseases is in our knowledge of the sources, modes, and channels of infection, both generally and with reference to individual members of the group; of personal predisposing conditions; and of the external circumstances which favour or promote their endemic and epidemic prevalence. On these matters our information was, within my own recollection, extremely vague and indefinite and many most significant facts with which we are now quite familiar were utterly unknown and even unsuspected, except by a few intelligent observers and earnest workers.

The question of the communicability of certain infectious complaints from person to person through the atmosphere is an extremely important one, especially when a number of individuals are aggregated together, as well as the distance to which the contagium can be thus conveyed and the agencies which assist in its dissemination. This question is by no means settled in not a few instances. Let me refer more particularly to typhoid fever and small-pox. While typhus fever has always been regarded as a disease strongly infectious from person to person, typhoid fever has been practically dealt with by the large majority of the profession as being free from danger in this way. Now, however, the tendency undoubtedly is, and probably rightly, to be much more careful as regards enteric fever from this aspect, and there is a growing objection to the admission of patients suffering from this complaint into the ordinary wards of general hospitals. Small-pox is still more important. Of course, it is a fact familiar to all that this complaint is highly infectious through the atmosphere, but how far it can be thus carried, particularly from a small-pox hospital or hospital ship and the influence of winds in conveying the infective agent, is another matter and may involve troublesome or even momentous consequences. I have noticed in the medical press recently directly contrary opinions on this question expressed by those who apparently have had equal experience and opportunities of arriving at a practical conclusion. How far emanations from drains, sewers, defective water-closets, and the like can produce so-called "blood poisoning" and other indefinite infective conditions is another question which needs clearing up.

Passing now to the more practical results of modern investigations as to infection the following facts are worthy of special attention.

1. As a starting point infective micro-organisms have been found and demonstrated in the blood; in certain secretions; in the excreta, urine as well as fæces; in the cutaneous structures or shed epithelium; possibly in the expired air; and in specific lesions, morbid products, and discharges from the body of various kinds. Hence we can readily understand how and why most of the diseases with which these organisms are associated are likely to be transmitted from individual to individual; how the infected materials may contaminate fomites and be thus conveyed far and wide; how they retain their activity in a dried state for an indefinite period, thus rendering apartments or other places infectious; and how they may be "air-borne," being carried about by atmospheric currents or winds and afterwards either inhaled or swallowed by persons, it may be, far removed from the original source of infection, remote epidemics being thus not uncommonly originated.

2. The communicability of certain grave diseases by the contamination of drinking water in different ways, but especially by admixture of infected excreta, is an established fact the importance and far-reaching consequences of which it is impossible to estimate or to realise in any adequate degree. Why such contamination should take place is often obvious enough, but it is rather startling to be told, as we have been within a recent period, that unsuspected and most inviting "spring water" may be a highly dangerous source of enteric fever. I have a very vivid recollection of an epidemic of cholera and another of enteric fever in Carmarthen when I was an apprentice, and in the light of modern knowledge there can be no doubt but that they were the result of infection through an excellent "spring water" in common use which had become contaminated with the specific excreta. While we are now all so familiar with the dangers of infected water, it required some hard teaching to convince the profession and the laity of its reality and we ought never to forget the excellent work done by Snow-Beck, Ballard, and other pioneers in relation to this matter. Even at the present time, moreover, my experience has led me to the conclusion that these dangers are by no means always appreciated as they ought to be, and I have met with not a few glaring instances of the injurious effects of ignorance or carelessness. In this connexion I may refer for a moment to the vigorous and praiseworthy efforts of my former pupil and friend Dr. H. E. Leigh Canney, who at any rate is fully alive to the evils and risks of water infection, to establish a Royal Water Corps as a special section of the Royal Army Medical Corps, the functions of which would be to prevent enteric fever, dysentery, cholera, and diarrhœa. It does not look, however, as if his project had "caught on" with the governing bodies and no doubt there would be serious practical difficulties in carrying it out.

3. One of the most striking additions in modern times to our knowledge regarding the conveyance of infection is in relation to food. In this connexion milk and its products stand out very prominently, not only on account of their frequent contamination by infectious materials, probably mainly from the deliberate addition of tainted water to milk, but also because this valuable food may convey organisms directly from diseased animals by which it is secreted. No doubt you are all familiar with the present controversy as to the communicability of bovine tuberculosis to the human subject in this way, but, notwithstanding Koch's dogmatic negative statement, more recent investigations, prominent amongst them those of Professor D. J. Hamilton of Aberdeen and Mr. M'Laughlan Young in this country, seem to have demonstrated conclusively that this authority, in spite of his high scientific claims and standing, is entirely wrong. At any rate, it would be a grave mistake to act on Koch's view or to ignore in the slightest degree the possibility of the conveyance by milk of the infective agents of tuberculous or other diseases. I will merely allude in passing to the probable danger in some cases of infection through meat, fried fish, uncooked vegetables, or various foods accidentally contaminated, as from being kept in infected rooms, or it may be by winds carrying organisms from a distance. But what shall I say about shell-fish? Dare I whisper in this neighbourhood the word "oysters"? Unfortunately there can be no doubt but that these "luxuries" are not uncommonly potent agents in originating enteric fever, and the same statement applies to the more humble and democratic mussels, cockles, or even periwinkles, as well as possibly to lobsters, crabs, and the like. May I venture to suggest that it is extremely desirable for all concerned that everywhere the utmost precautions should be taken to prevent as far as possible these most desirable and valuable articles of food from being contaminated by sewage of any kind, and the deliberate feeding of oysters on such materials, for commercial purposes, cannot be too strongly condemned and ought to be put a stop to by the most stringent legal measures.

4. The rôle which different animals play in the transmission of infectious diseases to man is another aspect of the subject upon which modern observations and researches have thrown remarkable light. Of course the relationship in this respect of such diseases as hydrophobia and glanders has long been recognised. The idea of direct infection through the milk or flesh of infected animals is of comparatively recent date. The danger of infection being carried directly by domestic animals, such as birds, cats, and dogs, from person to person, or perhaps because they themselves are suffering from certain diseases, is not yet appreciated as it ought to be. The rôle played by such unwelcome "large vermin" as rats and mice in relation to plague, and probably some other complaints, is now familiar to all. Flies, cockroaches, and the smaller but too well-known personal vermin may no doubt be instrumental in conveying infection in certain cases, and flies may thus taint food. But the most remarkable and important revelations which modern investigators have given us as to the transmission of infection by animals are those relating to mosquitoes. The discovery and demonstration of the connexion between these minute torturers of humanity and malaria, in which Sir Patrick Manson and Major Ronald Ross have taken such a prominent part, has already worked incalculable good and promises in the future to revolutionise the conditions of life in many parts of the world, to the inestimable advantage of the

communities who are native to the district as well as of Europeans whom circumstances compel to reside there. The same statement applies to yellow fever and probably to other affections prevailing in climates and localities where mosquitoes abound.

5. The question of the relation of infection to soil, place, and particular houses or groups of houses is a very important one, but about which there is at present much that is uncertain and indefinite, and that needs to be worked out more fully before any positive conclusions can be arrived at with regard to individual diseases. The fact that the tetanus bacillus comes from the soil, being especially associated with garden earth or horse-dung, is well established and was a most interesting and important modern discovery. Beri-beri is regarded by Manson as a "place disease," due to a toxin produced by a living germ operating in some culture medium outside the body. Of course, houses or rooms may, when once infected with the organisms of well-known diseases, retain them indefinitely and thus be the means of originating similar affections after long intervals.

6. Another most important aspect of infection from a practical point of view is the fact that we are every one of us always carrying about in various parts of our bodies microbes which, while habitually innocuous and non-virulent, may under favouring conditions, so far as they are concerned, become extremely virulent, or possibly specific, to our personal undoing; or we may even be harbouring in our mouths, throats, noses, ears, and thereabouts specific germs by which, quite unintentionally, we are liable to infect others at any time while we ourselves go scot-free. It is certain that very dangerous germs may lie dormant for an indefinite period in the human body, such as the bacilli of diphtheria, influenza, or tubercle, or their spores, and either lead to unexpected auto-infection or to the corresponding specific disease in others. When suppuration is set up in any part of the body, moreover, it is wonderful how disagreeable the different organisms can be in the way of migrating to various other structures and producing a similar condition in connexion with them.

7. I must just refer, lastly, to the progress made in our knowledge of the channels of entrance of microbes into the system and the modes in which they are disseminated. Here again the mouth, the throat, and the neighbouring parts come into unpleasant prominence, especially the tonsils, in connexion with scarlet fever, rheumatic fever, tuberculosis, actinomycosis, and other diseases. The dissemination of the organisms by cells, the blood stream, and the lymphatic channels is also an important fact positively demonstrated and in this dissemination embolism not uncommonly plays a conspicuous part.

MORBID ANATOMY AND HISTOLOGY.

I can only touch very superficially on this aspect of my subject, in order to draw attention to two or three of the more important points. Our knowledge of the actual nature and characters of the specific pathological lesions of most of the infectious diseases, both macroscopic and microscopic, has, I need hardly say, made enormous strides and much of it is in reality, for obvious reasons, of quite modern discovery and demonstration. Further, the recognition of the fact that certain pathological manifestations in connexion with internal organs or other structures are an essential part of an infective disease and not merely accidental complications or sequelæ, as was formerly supposed, if they were recognised at all, is an important step in advance. This may be exemplified by the relationship of renal disease to scarlet fever and of cardiac inflammations to the rheumatic state. At the same time our knowledge of what may be fairly regarded as complications and sequelæ of this class of complaints has not only greatly increased but has become much more definite and intelligible. As important pathological factors which are particularly liable to bring about complications and sequelæ in infective diseases may be mentioned congestion, inflammation, suppuration, embolism or thrombosis, and acute degenerations.

The last point I would refer to in this connexion is the very striking and most valuable results which have been derived from experimental investigations on animals with regard to the pathological effects of different pathogenic microbes and their toxins and more especially in relation to the nervous system. These have a direct bearing on the nervous sequelæ which so often follow several of the infectious diseases and which have come so prominently before the profession during recent years.

CLINICAL HISTORY AND PHENOMENA; DIAGNOSIS.

While we have to record certain distinct advances in our knowledge of the clinical history of several of the infective diseases, and while important additions have been made to our means of diagnosis, to which I shall presently refer, it cannot be said, speaking broadly, that the progress in this direction has been anything like commensurate with that relating to their pathology and etiology. Of course we are better acquainted clinically with such diseases as enteric fever, diphtheria, influenza, and tropical fevers because they have become more familiar to the profession generally, and modern knowledge enables us to understand and to explain more clearly their clinical phenomena on a pathological basis. Moreover, now and then careful observation reveals a new symptom or class of symptoms which proves to be of conspicuous diagnostic significance, as in the case of the "prodromal exanthems" of small-pox and Koplik's "buccal spots," which seem to be of real value in the early recognition of measles.

I presume it will be acknowledged on all hands that as early and correct a diagnosis as possible is of the utmost importance in the case of the several infectious diseases which come under observation in the ordinary routine of medical practice. This is of special moment when dealing with numbers of individuals brought into more or less intimate association; and I mention schools as a prominent and constant source of anxiety and worry to all concerned in relation to these complaints. Now it must be insisted upon at the outset that such diagnosis is in the large majority of instances actually and positively founded on very simple data, easily observed and readily studied—that is to say, we must as a matter of general routine rely, and can safely rely, in the diagnosis of a particular infectious disease, as regards its actual clinical history, on its mode of onset or invasion, its course or progress, and the simpler phenomena which personally I always speak of as "symptoms," as distinguished from those revealed by skilled physical or other special methods of investigation. And, in my opinion, it would be a serious mistake to encourage in any way the idea that in the ordinary run of cases of this class of complaints we cannot come to any definite conclusion except with the aid of modern scientific methods. Under the category of symptoms it must be noted that subjective morbid sensations, either general or local, are very conspicuous and significant in several diseases of an infectious nature. But, of course, it is from objective symptoms which we can ourselves note and investigate that we derive our chief and more trustworthy information. They may be evident or attract attention at once and one or more may be even quite pathognomonic, such as the peculiar cough of pertussis or the nervous and muscular disorders characteristic of tetanus and hydrophobia. The cutaneous eruptions or rashes of the exanthemata constitute a most important group of objective symptoms with which it is essential to be thoroughly conversant in all their details. The external manifestations of such infectious diseases as mumps, syphilis, plague, anthrax, and glanders also come under this category. So-called catarrhal and throat symptoms are of common occurrence and the affected parts can, as a rule, be easily seen or felt; while such a disease as gonorrhœa is recognised by its specific urethral discharge. The phenomena associated with the well-known internal lesions of such diseases as typhoid fever or dysentery are, as a rule, very significant or even characteristic. Of course, such affections as pneumonia or rheumatic fever, which are now classed among the acute specific fevers, as well as tuberculous affections will have their own peculiar localising symptoms.

There are certain general symptoms which, in a large proportion of infectious and infective diseases and cases, demand careful observation and study. Those indicative of the "febrile state," I need scarcely say, often assume a special prominence. From this point of view I presume that every medical man, as a matter of routine, "feels the pulse," "looks at the tongue," and "takes the temperature." In some instances both the pulse and the tongue afford special information, but I am not at all sure that this fact is always duly appreciated nowadays. In this connexion one can scarcely avoid making some allusion to the "clinical thermometer." This small instrument is, I need hardly remind you, at present universally recognised as an invaluable and often essential aid in diagnosis in most infective diseases, not only in determining the existence of pyrexia, but also in studying its degree, course, and other details. Quite recently there was an interesting correspondence in the

British Medical Journal concerning the history of the thermometer for clinical purposes, to which I may be permitted briefly to refer. In the issue of April 4th Sir William Broadbent brought forward the historical fact that an army surgeon, Dr. Archibald Arnott, recorded the temperature in the case of the First Napoleon at St. Helena in 1821. He says that the record is set down as if it were a regular part of routine observation and Dr. Arnott must have had a thermometer with him for the purpose. In attempting to trace back how Dr. Arnott came to adopt the instrument he thinks it probable that he learnt its use in the wards of the Edinburgh Royal Infirmary. He calls attention to the fact that Dr. James Currie, of Liverpool, whose first edition of his work on "Cold Affusion in Fever" was published in 1797, was an Edinburgh graduate and was first led to employ the thermometer by a debate at a society of students there. Sir William Broadbent's interesting statement led to further communications, showing that the bodily temperature was systematically recorded in febrile diseases by several observers during the latter half of the eighteenth and first half of the last century, amongst them by Dr. Livingstone, in Africa, in 1853. As is well known, however, it is to the observations and writings of Wünderlich, about the year 1860 and subsequently, that we owe the general recognition of the value of clinical thermometry. Sir Samuel Wilks states that he was led to procure an instrument for Guy's Hospital by reading the chapter on the subject in Aitken's "Practice of Medicine." He thus describes it: "I think it was nearly a foot long and was so great a novelty that it was taken to a South-eastern meeting of the British Medical Association for exhibition, where the members regarded it with much curiosity and interest, although, I am sorry to say, one or two with ridicule." What a contrast to the neat and convenient, easily applied, very rapid, and most accurate recorder of bodily temperature now at our command.

I have thus dealt with the symptomatic aspect of infectious diseases somewhat at length—in the first place, because I regard it as of fundamental and essential importance in the ordinary run of cases, notwithstanding the progress made in scientific clinical methods; and secondly, as a protest against the tendency amongst the rising generations of our profession, which it is impossible to overlook, either to ignore common symptoms altogether, as if beneath their notice, or to take no trouble whatever either to understand or to study them. I would remind them that their predecessors—not so very long ago either—had no other data upon which to found their diagnosis, and practically no scientific instruments or apparatus to help them, and yet most of them knew pretty well what they were about. In relation to the complaints with which we are now concerned, it is usually a combination of symptoms which are of diagnostic significance; and in many instances they are more or less characteristic even during the so-called "premonitory" stage, though they usually become more definite later, and it may be impossible for a time to arrive at a positive opinion. As already stated, in some of these diseases one particular symptom or class of symptoms is, however, quite pathognomonic.

I now pass on to refer briefly to other modes of investigation not uncommonly of much diagnostic value in relation to infectious and infective diseases, which are also comparatively easily practised and are supposed to be carried out more or less as a matter of routine in ordinary medical practice. I allude to physical examination, especially as applied to the chest and abdomen; and examination of the urine. Of course, in the clinical study of many inflammatory diseases and special affections now included under this category—for example, pneumonia or cardiac rheumatic manifestations—skilled physical examination is essential, while it is also of great help in the detection of complications and sequelæ, to which it must be noted attention may not be attracted by any prominent symptoms, and consequently they are very liable to be overlooked unless the practitioner is constantly on the alert to detect them by the systematic employment of this method of investigation. The necessity for examining the urine at frequent intervals would, I suppose, be generally recognised in scarlet fever, or perhaps even in diphtheria, for well-known reasons; but this measure is not always carried out so regularly or systematically as it might be in other complaints of an infectious nature. As a special test applied to urine I may remind you of Ehrlich's "diazo-reaction" for typhoid fever; but it is not trustworthy, even when present, as it may be met with in other affections.

The special methods of diagnosis applicable to infective and infectious diseases which modern scientific researches have brought so prominently before the medical profession have naturally attracted great attention and excited keen interest. It might be thought an occasion like this would afford a most suitable opportunity for discussing these methods at some length and endeavouring to estimate their practical advantages up to the present time and their future possibilities. I have preferred, however, to devote most of the time I could give to the clinical aspect of my subject to the more common modes of investigation, for reasons already sufficiently indicated. I have therefore left myself but little space to deal with these more scientific methods which I may remind you often require the help of an expert before their results can be safely relied on. I shall content myself with merely giving the following summary of these methods and their objects, mainly coming under the head of bacteriological diagnosis. They include: 1. Examination of the blood, both as regards its normal constituents, especially the number of leucocytes and the relative proportion of different kinds of cells, the blood plates, and the presence of abnormal corpuscles, and from a bacteriological point of view. The spirillum of relapsing fever and the malarial parasites are prominent examples of pathogenic organisms found in the blood and the latter have to be observed and studied during the changes they undergo, along with their effects upon the red corpuscles and the formation of pigment. 2. The further detection and microscopic demonstration of organisms, specific or non-specific or both, either obtained from the tissues of the body or contained in secretions, fæces and urine, various discharges, sputum being particularly noteworthy, and other morbid products of different kinds, fluid or solid, of which diphtheritic material is a conspicuous example. The organisms are not only identified by their morphological characters but also as a rule by their peculiar staining reactions. 3. Separation or isolation of the microbes, which are afterwards grown on suitable media in order to obtain cultures, the results being often highly characteristic, both to the naked eye and on microscopic examination. 4. Application of the "segregation" and "agglutination" tests in relation to the blood serum of the patient, which is most familiar to us in Widal's test for enteric fever. 5. The observation of the effects on the individual of the inoculation of certain products of the specific microbe of the disease from which he is supposed to be suffering, as in the so-called "reaction test" with tuberculin for tuberculosis. 6. The pathological results of inoculation of animals, either with the organisms themselves or with their toxins, which in some instances are essential for positive and accurate diagnosis, lesions of a definite and characteristic nature being thus produced, as is well exemplified by diphtheria.

A rather awkward question, but one of extreme practical importance to the profession, has been recently forced upon our notice which I cannot altogether pass by. In the *British Medical Journal* of March 7th an abstract is given of a disquieting statement issued by the Hospitals Committee of the Metropolitan Asylums Board as to the numbers of cases of mistaken diagnosis sent to the hospitals of the Board as notifiable during the three years 1899-1901. The subject is very ably, fairly, and sensibly dealt with in a leading article in the same journal of March 14th on the Diagnosis of Notifiable Diseases, which might be read with advantage by all who are directly interested in the question, or indeed even by the laity generally. They do not in the least realise the difficulties which confront the practitioner, with whom I have the deepest sympathy; and residents at the infectious hospitals cannot be too careful and particular not to hurt the feelings of their brethren in the profession more than can be possibly helped. Of course, any carelessness in diagnosis in relation to infectious diseases is inexcusable, but really young practitioners are not responsible for the fact that they are not so familiar with these complaints clinically as would be desirable and that many of them have to gain the requisite experience after they have entered upon their active professional duties. May I venture to suggest that while the modern medical student has immense advantages he labours under a decided disadvantage from this point of view, as compared with those of us who served an apprenticeship and became familiar with, at any rate, the more common infectious diseases, even before we started upon our regular studies at a medical school. As a matter of fact, he gets very little opportunity of gaining practical knowledge of most of these complaints during his period of studentship and has to fall back upon

so-called "post-graduate instruction" if he desires further and more special training and experience. The bacteriological methods of diagnosis ought to help materially, should there be any real difficulty, in diminishing the number of mistaken cases in the future, especially if facilities are afforded to the practitioner of using them without delay, but they are not infallible, even where they can be applied.

TREATMENT AND PREVENTION.

To the laity of course the question which appeals most directly and pressingly with reference to infective and infectious diseases is, What position do we as a profession stand in to-day as regards their treatment and prevention? Have we made any progress at all; and, if so, to what extent and in what directions? Have we fulfilled the somewhat optimistic forecasts and promises which have been so frequently and loudly expressed in speech and written article during recent years.

In the first place, it must be admitted that we can boast of but very few "specific remedies" added to our list for the treatment of individual infective or infectious diseases in modern times, though we understand far better the modes of action of several of those which were used previously on empirical grounds, as you, Mr. President, have pointed out in your Address. Indeed, beyond the employment of salicin and salicylates or allied agents for rheumatism, I am not sure that we can claim any positive and assured discovery of this kind. Of course, there are not a few practitioners who have a routine treatment or a particular remedy for each one of these complaints, in which they implicitly believe, and which is infallible according to their own account. I must, however, much to my regret, while envying their "cocksuredness," decline to accept their statement as gospel. In my opinion, speaking generally, the more of an "open mind" and a "free hand" the practitioner cultivates in dealing with the majority of infectious diseases the better will it be for his patients.

Taking a comprehensive survey of the changes and modifications which have taken place in the treatment of infectious diseases one of the most conspicuous and beneficial is that the severe depleting and depressing measures which were formerly extensively if not almost universally carried out have been practically done away with and are now only resorted to in exceptional circumstances or for particular purposes, as in the free use of purgatives for certain individual complaints. Further, it is a profound matter of congratulation for ourselves and our patients that we now apply practical common sense and sound physiological, natural, and sanitary principles in dealing with these diseases as a matter of routine, in the way of physical and mental rest, abundance of fresh air and free ventilation, careful attention to hygienic conditions and surroundings, regulation of diet, personal cleanliness, general comfort, judicious disinfection, and other essential matters. In this connexion we can never forget or ignore the immense advances which have been made in the science and art of nursing and it would be impossible to over-estimate the service and help which the "trained nurse" can, and as a rule does, render in dealing with cases of infectious diseases in many trying and anxious circumstances. In my opinion a very large proportion of cases of acute specific fevers can be steered through their course on the lines just indicated without any active treatment whatever unless it be an occasional aperient; or if the exigencies of private practice demand some "medicine" we have excellent friends in the old-fashioned "saline mixture" and the "effervescent mixture," which at any rate are quite harmless and may be of definite use for certain purposes. The "open-air" treatment of phthisis is in reality in the main a mere development of similar principles.

Let it not be supposed, however, from what I have just said that I advocate a general policy of "masterly inactivity" in dealing with infectious diseases. Although we have but few novelties in the way of "specific remedies" to boast of, many most valuable medicinal agents in the treatment of these complaints have been introduced within comparatively recent times, whilst others previously known have also come to be employed with much advantage for certain definite purposes. There are many diseases and cases in which even from the outset the practitioner must recognise the necessity of administering in some way or other suitable medicinal remedies, or events not uncommonly supervene during their course which call for his interference, and he ought to know what to do in the particular circumstances and be prepared to act accordingly.

Without entering into any details I may point out that one of the chief classes of therapeutic agents which in modern times have come to the front in the treatment of infectious diseases are antiseptics, antiferments, germicides, or bactericides, as they are variously called, to which group not only many most valuable additions have been and are being made, but which are now employed in ways which our predecessors never dreamt of, though I think that some of the methods of using or administering certain antiseptics in relation to particular diseases which are advocated and practised at the present day are decidedly open to criticism. Another remarkable group are the antipyretics prepared in the chemical laboratory—phenazone, acetanilide, phenacetin, &c.—which when judiciously given may be of conspicuous service. Other agents deserving of mention are cardiac stimulants and tonics, strychnine being now recognised as a most valuable remedy from this point of view; and the newer hypnotics or other drugs intended to relieve particular symptoms, which may thus afford material assistance in guiding patients through serious illnesses of this nature. In this connexion I may also mention certain therapeutic methods and agents of comparatively modern introduction which are undoubtedly of conspicuous service in combating grave conditions immediately threatening life, such as subcutaneous or intravenous injection of ether or other diffuse stimulants, inhalation of oxygen, saline injections, and transfusion of blood or other suitable substitutes. For the various complications and sequelæ with which we have so often to deal in relation to infectious diseases and which not uncommonly sorely perplex us treatment must be conducted on general principles, guided by the knowledge, experience, and common sense of the practitioner.

There are certain special questions bearing upon the treatment of infectious diseases which I cannot pass over on an occasion like this without brief comment.

1. *Hydrotherapy and allied methods.*—No doubt you are aware that Dr. James Currie of Liverpool, to whom I have previously alluded, strongly advocated and carried out the treatment of fevers on a considerable scale by baths and douches. This treatment fell into practical desuetude, and, indeed, was generally looked upon with aversion and dread. In modern times, however, it has not only been revived but numerous other methods for applying cold to the body, either generally or locally, have been added, not only by means of water, but also of ice and cold air. These methods are now generally recognised and extensively adopted, probably more on the continent and in the United States of America than in this country, even in the treatment of many of the ordinary fevers, but especially in the more severe cases; and the local application of ice is strongly advocated in acute pneumonia and other inflammatory infective diseases. While of great value as antipyretics they have other important beneficial actions, which I need not now specify. Regarding hydrotherapy and allied measures in the treatment of infectious diseases, I would remark that every medical practitioner ought to be familiar with them and be able and ready to carry them out when required. The milder methods, such as sponging the skin or applying ice locally, are easily practised and are often of the greatest service. Personally, however, I do not advocate or employ the more severe methods as a routine system, as many do; and I feel sure that I have met with serious injurious consequences from such a practice. On the other hand, their essential value in saving life under grave conditions cannot be too strongly insisted upon.

2. *Use of alcohol.*—I now come to a question in relation to the treatment of infectious diseases and cases, both generally and individually, which demands the most thoughtful consideration—namely, that of the administration of alcohol. And I feel bound to take this opportunity of stating emphatically that when we, as members of the medical profession, approach from any point of view this alcohol question, we ought to do so under a deep sense of responsibility, but at the same time rationally and without undue bias one way or the other. At a large political meeting held not very long ago an eminent statesman was contrasting imperial with local questions and giving his own ideas about their relative importance, founded upon certain personal experiences. Amongst the local questions he mentioned "temperance reforms" and his allusion was received by the audience with "loud laughter." I venture to say that such is not the spirit in which this grave subject ought to be regarded at the present day by any community; and, at any rate, the medical profession as a body is bound to sympathise with and to encourage every effort made in this country to check the

terrible evils produced by intemperance, which confront us in such an overwhelming and appalling degree on all hands in our daily experience, and to do our utmost to promote sobriety amongst all classes, however hopeless the task may appear to be. And from this point of view we should always be most careful to avoid ordering stimulants to patients not accustomed to them unless they are, in our individual opinion, really necessary; while it is well always to give very definite instructions as to their administration. There is an influential body of the medical faculty in this and other countries, some of the members of which are of the highest professional and scientific standing, who absolutely and entirely object to the use of alcohol in any circumstances, and for these ladies and gentlemen I entertain the highest respect. As you are probably aware, an "International Medical Manifesto" against the use of alcoholic liquors was issued a short time ago, which roused resentment and a strong protest on the part of some members of our profession. To a certain extent I share their feelings, for, with all due respect to the opinions and statements expressed in that manifesto, I think those who signed it have gone too far and I regret that I cannot altogether agree with them. At any rate, so far as infectious diseases are concerned, I must express my own strong conviction that in a large number of cases the judicious administration of alcohol is of the greatest service, and I have seen a considerable number of grave, and sometimes almost hopeless, cases in which I have no hesitation in affirming that recovery was due to the use of alcoholic stimulants, not uncommonly in considerable quantities. Moreover, they are often of conspicuous value during convalescence. With ordinary prudence and care it is quite easy to avoid establishing a habit of taking stimulants in the case of patients who have been previously abstainers. While thus expressing my personal opinion in favour of the use of these agents in infectious diseases in suitable circumstances, I feel bound, on the other hand, to warn against their employment as a matter of routine, and I venture to urge that the most thoughtful and conscientious consideration should be given to every individual case before ordering them.

3. *External and local treatment.*—The treatment of external or local manifestations of particular infectious diseases, such as scarlet fever, small-pox, or diphtheria, affords legitimate ground for differences of opinion, and I must confess it is often puzzling to determine what is best to be done for such conditions when one reads the different methods of treatment advocated by different experienced authorities. I cannot refer to them further now and must content myself with saying that the measures to be adopted must be determined very much by the particular views of the practitioner, guided by judgment and discretion and modified by the special circumstances of each case. Antiseptics and disinfectants are employed with great advantage as local applications for various purposes. How far the light treatment, the x rays, or particular colour rays are going to help us, cannot be definitely determined at the present time. Just now the subject has come very prominently before the profession and the public, and the "red-light treatment of small-pox," which, however, is by no means a novelty, so strongly advocated by Professor Finsen in the *British Medical Journal* of June 6th, is attracting special attention, as well as some adverse criticism. What we may expect, also, from that wonderful newly discovered element—radium—it is impossible to foretell, but we must be on our guard against accepting statements as to its marvellous curative effects by irresponsible observers.

4. *Vaccines: Serum-therapy.*—What would, no doubt, be generally regarded as the most vitally interesting and important question of modern times, bearing upon the prevention and treatment of the entire group of infective diseases, is that of "serum-therapy," using the term as an inclusive one which has come as the natural outcome of the microbic theory and is founded, on the whole, on reliable bacteriological researches and experiments, supported by the results of practical experience in living subjects. Time will only permit me on the present occasion to touch the fringe of this most attractive and fascinating subject, and I will merely ask you to bear with me while I remind you for a moment of what this method of treatment consists, and what are its objects and aims. Following Sims Woodhead's classification, the materials used are divided into—(1) vaccines, which are either cultivations containing pathogenetic micro-organisms with toxins or toxins only, or the tissues or fluids of an animal suffering from a particular infectious disease; and (2) antisera, which may be antitoxic only, neutralising the toxins, antibacterial or antimicrobic, acting directly upon the organisms, or in some instances having both actions. The comparatively recent investigations of Professor A. Macfadyen and Mr. Sidney Rowland with regard to the immunising power of the cell plasma of the typhoid bacillus, and the effects of repeated injections of this substance in rendering the blood serum of an animal both antitoxic and bactericidal are very remarkable and promise great results in the future. Up to the present time these therapeutic agents have been practically only employed by inoculation, being usually injected subcutaneously, but exceptionally more deeply, or into special structures. I note, however, that the antidiphtheritic serum has lately been recommended to be administered by enema, or even in pastils. Vaccines and antisera are employed either for the purpose of producing temporary or permanent immunity against an individual disease; or for the actual treatment of certain complaints or morbid conditions, either acting as definite "cures" or so modifying their course that their severity and dangers are materially lessened, their progress is hastened, and their mortality is greatly diminished. The large majority of these agents are specific, being only used in relation to a particular disease, but the antistreptococcic serum has been found of service in various affections and so-called "Coley's fluid" is also non-specific. The diseases thus treated with which we are most familiar are small-pox, as prevented or modified by vaccination and revaccination, hydrophobia, diphtheria, tetanus, enteric fever, scarlet fever, cholera, pneumonia, septicæmia, anthrax and glanders, plague, tuberculosis, leprosy, and cancerous or sarcomatous growths, assuming them to be infective. Now no one who has watched the course of events during recent years and who is unprejudiced can doubt for a moment or fail to acknowledge the immense value of this modern therapeutic method in relation to some of these complaints. There are others, however, in which thus far it has entirely failed in its objects, while in others still it is on its trial and those who are in a position to speak authoritatively differ widely in their views and conclusions as to its efficacy in some of the most important infectious diseases. Personally I confess that I am inclined to regard not a few of the positive statements made with a sceptical mind and I think we ought to be particularly careful in accepting and acting upon them at the present time, remembering the suspicious and not too friendly attitude of a large number of the influential laity towards the medical profession. At the same time it cannot be too strongly insisted upon that every member of the medical profession ought to avail himself or herself to the full of any method of treatment which bacteriology offers us, provided it has been scientifically and practically proved and demonstrated to deserve our confidence. It is not for us, in the present state of the law, to deal with the "conscientious objector," but I emphatically affirm that any individual practitioner who wilfully and with intent neglects or is in actual antagonism to vaccination and revaccination as a protection against small-pox may be justly regarded as guilty of a grave dereliction of duty and is responsible for serious mischief, the results of which are but too evident to any unprejudiced observer. The same remark certainly applies to the neglect of the vaccine or antitoxin treatment for diphtheria, hydrophobia, tetanus, and anthrax. The opening of the new buildings of the Jenner (now the Lister) Institute of Preventive Medicine encourages the hope that this country will not in the future be behind others in advancing this most important and promising branch of scientific and practical medicine.

It was my original intention to offer some observations on the prevention of infectious diseases from a general standpoint, but I have already trespassed too long upon your patience and must content myself with a few closing remarks. I venture to affirm that the predominant aim of the medical profession as a whole is essentially beneficent. In support of which statement I can confidently draw attention to the deep interest exhibited by its members in this question and to the efforts made by them, not only to limit and to prevent these complaints in a general way, but to eradicate and to exterminate those with which we may be thus able to cope effectually. This is no sham or pretence on our part, but an honest and straightforward policy and purpose to which not a few devote their lives and best efforts, which ought to be a rebuke to scoffers and slanderers, of whom there are many. I will go further and say that in dealing with infectious diseases medical practitioners and scientific workers often exhibit a brave, courageous, and self-sacrificing spirit which is worthy of our highest esteem and admiration. To go into the midst

of a virulent epidemic and to fight against it day and night, often under the most trying and adverse conditions, which is no uncommon experience, is no trifling matter; and I could give many instances of individual courage and devotion, as well as of voluntary exposure to grave personal danger, sometimes ending fatally, which were truly heroic. Even the bacteriological researches in laboratories, which are intended to benefit humanity, are a source of danger—witness the cases of fatal infection with tuberculosis and the death of the young Austrian medical man who not long ago succumbed to plague while working in Berlin. But I feel bound to pay a special tribute of respect and admiration to those who have gone forth to pestilential climates and often under great hardships, or even by submitting themselves to dangerous personal experiments, have done such marvellous work in diminishing and controlling, or in some districts even exterminating, malarial and other diseases which were formerly the cause of destruction of human life on a vast scale, as well of such extensive and profound deterioration of health.

What will be the future progress of events in relation to the prevention of infectious diseases it is impossible to foretell or to estimate, though the forecast is in certain directions decidedly hopeful. I venture, however, to submit that we as a profession should be extremely cautious as to what we say and should avoid a too "cheery optimism" in the way of making promises and predictions which, recognising the very nature of things, the conditions under which humanity exists, and the difficulties which so-called civilisation brings with it, experience and common sense must tell us are, to say the least, extremely rash. On the other hand, let us never relax in our efforts to promote the good cause and to encourage, to develop, and to enforce every measure, scientific or practical, which has for its object the mitigation or prevention of those widely spread and often terrible infectious diseases which now add so enormously to the death-rate and which, even in cases of recovery, leave such serious after consequences amongst large numbers of the community. And this we must do in spite of opposition, however powerful, persistent calumny, vicious attacks on our motives, or even being called foul names. There are numerous "antis" about just now, but for downright insolence and impudence the anti-vivisectionists "hold the field." They have the most astounding faculty and capacity for fabricating statements for which there is absolutely no foundation, for distorting facts, and for cooking statistics, and they stick at nothing. Let us treat them and their hysterical outbursts with the contempt which they deserve. Our duty is plain enough. Not only must we work on steadily as a profession in the direction I have indicated but we must earnestly strive to gain the confidence and coöperation of influential individuals and communities and to guide them on intelligent and rational lines.

I have been asked to speak in this address in support of the appointment of a Minister of Public Health. I note that you, Mr. President, are not in favour of such an appointment, but personally I really do not feel competent to speak one way or the other. You have sketched a scheme with regard to the practical and official working of the Public Health Department which appears to have sound principles underlying it, and at any rate some change is obviously necessary. In the meantime, however, we must do what we can to educate and to influence borough and county councils and other public bodies which are concerned with sanitary matters, as well as members of both Houses of Parliament, and to stimulate them to do their duty. Thus will we, as members of a self-sacrificing and noble calling, while endeavouring in our individual capacity to perform conscientiously and intelligently the duties which devolve upon us in relation to actual cases of infectious diseases which come before us in our several spheres of practice, be further, collectively and with concerted action, doing what lies in our power to promote the health and wellbeing of our fellow creatures on a large and comprehensive scale and to avert or to mitigate the effects of those grave maladies which are now such a scourge to humanity.

UNIVERSITY OF ABERDEEN.—After the graduation ceremony on July 24th a bronze tablet, to the memory of the late H. Alleyne Nicholson, M.D., D.Sc., F.R.S., professor of natural history in Aberdeen University, was handed over to the custody of the University authorities by Professor Arthur Thomson, on behalf of the subscribers, who numbered about 60 of the friends, colleagues, and students of the late professor.

Address in Surgery:

OBSERVATIONS ON THE EVOLUTION OF ABDOMINAL SURGERY FROM PERSONAL REMINISCENCES EXTENDING OVER A THIRD OF A CENTURY AND THE PERFORMANCE OF 2000 OPERATIONS.

Delivered at the Annual Meeting of the British Medical Association at Swansea on July 30th, 1903,

BY A. W. MAYO ROBSON, F.R.C.S. ENG.,
HUNTERIAN PROFESSOR OF SURGERY AND PATHOLOGY, ROYAL COLLEGE OF SURGEONS OF ENGLAND.

MR. PRESIDENT AND GENTLEMEN,—I know well that to be invited to deliver the Address in Surgery before the British Medical Association is to receive one of the greatest compliments that the profession can confer, for the council represents a unique constituency, both in numbers and intellect. But with the sense of honour comes also the profound sense of responsibility, hence it was with mingled feelings that I ventured to accept your kind invitation. A third of a century has elapsed since I entered on my medical work and when I look back over that long period and see the changes that have occurred I am inclined to wonder whether I really belong to the same profession as in 1870. It was then quite usual for the surgeon to be physician, obstetrician, and general practitioner at the same time, and only in a very few of the large centres was surgery made a specialty of; yet such have been the increase of knowledge and the improvement in technique in the art and science of surgery in its various branches that the extinction of the general surgeon at one time appeared possible, which would have been a misfortune; for although thoroughly believing in specialisation, I consider that the specialty should come later; in other words, I would have the surgeon first to know something of everything in his profession and later everything of something, since we must all acknowledge that the accumulation of knowledge renders it impossible that one should know all of everything. Along with many of my audience I have had the advantage of witnessing the revolution not only in surgery and medicine but in every branch of medical work, which occurred during the last 30 years of the nineteenth century, such changes as will stamp that period for ever in the annals of our art. The surgeon who entered on his work in the "eighties" or later can scarcely picture to himself the state of affairs that existed in the early "seventies," when it was possible to see, as I myself have done, a hospital ravaged with hospital gangrene and phagedæna; when erysipelas, pyæmia, and septicæmia were never long absent from any surgical wards; when any operation, however simple, might assume complications of the most serious import; when secondary hæmorrhage was of frequent occurrence; when compound fractures often took months to heal and frequently ended in loss of life or limb; when erysipelas was put down to change of weather, tetanus to nerve irritation, tubercle to a diathesis, and rapid deaths from septicæmia to shock. Those of my hearers who have passed through this period of the history of medicine have witnessed the birth and growth of the science of bacteriology and the nativity, infancy, adolescence, and sturdy manhood of its brilliant offspring, antiseptic and aseptic surgery, the distinguished author of which, I am glad to say, is still with us and has himself witnessed the truth of his theories and the success of his system in the saving of more lives each year than Napoleon destroyed in all his wars. It is clearly impossible in a short time even to record briefly all the advances made in surgery, but in my work as a general surgeon I have also had the privilege of taking part in the development and progress of a special branch—abdominal surgery—than which nothing could better exemplify the great changes that have occurred during the 33 years which I am considering, for in the early "seventies" abdominal diseases were practically always treated expectantly, and if

we look at the reports of 1870 we shall see that, as judged by results, it was perhaps just as well that surgery had then no business inside the abdomen.

As knowledge increased and surgery became more scientific, many of the diseases in question became surgical either from the beginning or at a later period in their course, so that to-day abdominal surgery is a subject of the first importance. Not only has treatment advanced by leaps and bounds but our knowledge of abdominal diseases and their successful diagnosis has enormously increased, partly by pathological advancement generally and by experimental research but also by philosophical observations on the operating table and the study of disease in the living subject, in other words through biopsy instead of necropsy. The time was when the physician thought he had done all that was necessary when he had arrived at a probable diagnosis and he philosophically waited until his hypotheses were proved or disproved in the deadhouse; treatment was left to the junior as being quite a secondary matter and I am bound to say that in abdominal diseases that were not merely functional and that could not be treated in the out-patient department the estimate placed on treatment was often correct. Then ovarian disease was generally known as a form of dropsy and was either treated by tapping, when the pressure became so severe as to demand some relief, or seeing that tapping was at times fatal or only gave a temporary respite, the greater number of cases went untreated. The surgery of the intestines, except for strangulated hernia, was not thought of and uterine, renal, gall-bladder, stomach, liver, and pancreatic surgery was hardly dreamt of as possible. In 1870 an attempt was being made in some of the general hospitals to emulate the example set by certain pioneers, such as Clay of Manchester, Spencer Wells of London, and Keith of Edinburgh, but with what result? It is interesting to note the following facts. In St. Bartholomew's Hospital in 1870 there were three ovariotomies, all fatal, and 20 cases of herniotomy in which the sac was opened, with nine deaths. In Guy's Hospital there were five ovariotomies, with three deaths, and 19 herniotomies with opening of the sac, with 11 deaths. In St. Thomas's Hospital there was one ovariotomy, in which death occurred, and there were 14 herniotomies, with eight deaths. In St. George's Hospital there were two ovariotomies, both ending fatally, one colotomy, which ended fatally, and 20 herniotomies, with eight deaths. In the same reports there was always found a special record of the number of cases which are now so rarely seen. For instance, in one of the reports for 1870 there were recorded 53 cases of erysipelas, 20 of phagedæna, 93 of diffuse cellulitis, and four cases of secondary hæmorrhage after operation, which at the present time would be sufficient to condemn any surgical clinic; yet this record was no exception, as all the hospitals furnished similar reports. It would be invidious to compare the work of the various hospitals, as shown by the reports of 1902 published this year, but in one of the chief hospitals I noticed a record of 40 ovariotomies with 39 recoveries, of 18 hysterectomies with 17 recoveries, of 241 herniotomies, including strangulated hernia as well as radical cure of hernia, with 233 recoveries, of 16 gall-bladder operations with 15 recoveries—a record of which no hospital in the world need feel ashamed. The rise and progress of abdominal surgery have centred more around ovariotomy than any other branch of work, hence it may be of interest to review for a moment the evolution of that operation, for it has been the battlefield of abdominal work.

[Mr. Mayo Robson then detailed the well-known controversies in which Keith in Edinburgh, Lawson Tait in Birmingham, and Spencer Wells in London took so prominent a part and showed that under perfect technique, with a judicious combination of asepsis and antisepsis, ovariotomy has become a truly beneficent procedure. He continued:—]

PERITONITIS.

What gives special interest to surgical affections of the abdomen is the fact that the viscera are invested in whole or in part by the large serous peritoneal sac and that infection, however communicated, is apt to assume serious proportions, involving not only the whole abdominal cavity but the system at large. In the "seventies," and even much later, the diagnosis of peritonitis used to be made with great satisfaction, as if it were final and sufficient; but I should like to ask who at the present time with any claim to scientific knowledge would be content with a mere name that gives no idea of the disease to be treated or of the cause of the illness? It may not be convenient, as has been suggested by M. Aimé Guinard, that the term "peritonitis" should be altogether given up, for even at the present time it is a convenient cloak for ignorance; moreover, the public have some idea of what is meant by the term; but do not let us deceive ourselves—peritonitis so-called is an infection pure and simple of a large serous sac and the symptoms will vary with each form of organism, whether streptococcus, pneumococcus, gonococcus, or bacterium coli, as well as with the amount of toxin absorbed. Accepting this view we cannot be astonished to find an acute infection associated with a lowered temperature and a rapid small pulse. This paradox is so characteristic that for years one has been teaching pupils to look on a subnormal or even a normal temperature combined with a rapid pulse as serious in surgical diseases of the abdomen and as indicating the absorption of toxins. If the disease were a true inflammation we should look for the cardinal symptom, fever, which is absent in these toxæmic cases. The discovery of the frequency of perforative appendicitis, of perforating gastric ulcer, and of other peritoneal catastrophes is gradually abolishing the term "acute peritonitis" for the more rational one of "acute peritoneal infection," for the treatment of which surgery alone is of any use, and even for it to be of service, operation must not be long delayed. These more rational views of pathology and treatment have originated and developed within recent years, and I can recall case after case, during my student days, in which peritoneal catastrophes ended fatally, where now we should by timely interference give a very fair chance of life. Could anything show this more definitely than the results of treatment of perforated gastric ulcers, which if operated on at once would have hardly any mortality; if within 12 hours of rupture a mortality of 16·6 per cent.; if within 24 hours, 63·6 per cent.; if within 36 hours, 87·5 per cent.; and if delayed for 48 hours will only rarely succeed; or, to give another example, than the results of surgical treatment of the intestine in typhoid fever, alas, too seldom resorted to. To give an example kindly obtained for me by Dr. P. J. Cammidge: out of a total number of 900 cases of typhoid fever occurring in St. Bartholomew's Hospital in the years 1895 to 1901 there were 102 deaths. Among the 900 cases were 38 of perforation, of which 34 died unoperated on, whereas of the four operated on three recovered. Could operation have been done in the remaining cases it would seem possible that 25 more lives might have been saved. In Professor Osler's clinic, out of 11 cases five were saved by operation. Intimately related to intestinal perforation is perforation of the gall-bladder in typhoid fever, of which 34 cases have been collected by Dr. Erdmann of New York; of these 27 were not operated on and all died, but of the seven which were operated on four recovered. As spontaneous recovery from perforation is extremely rare it is of the utmost importance that not only should we have an early recognition of the perforation but also an immediate operation. Up to 1883 every case of intraperitoneal rupture of the bladder had died but in that year the late Sir William Mac Cormac operated and saved two lives; since that time there have been 54 operations recorded, according to Dr. Jones,[1] out of which 28 patients recovered. Could these cases have been seen earlier, the saving of life would have been much greater, for in the cases that recovered there had only been an average interval of 25¼ hours between the accident and the operation, whereas in the cases that died the average interval had been 32 hours, and of the 26 deaths 17 were due to peritoneal infection. Just as in gastric ulcer, the danger is increased with every hour of delay between the accident and operation, hence in case of doubt exploration (which can be done through a very small incision, just sufficient to admit the finger) is safer than waiting, and experience shows that the aiding of the diagnosis by the injection of air or fluid into the bladder adds to the risk of general peritonitis by spreading infection over the whole abdomen. In injuries of the abdomen by penetrating wound, whether stab or bullet wounds, the resulting troubles are from infection, either directly through the instrument causing the injury or by perforation of one of the hollow viscera and escape into the peritoneal cavity of the septic contents. How much more rational it is to consider this as an infection and immediately to set about the removal of the poison and the repair of the damage, if it can be done under conditions favourable to success, than to treat it as peritonitis and to rely on so-called antiphlogistic remedies. Few greater

[1] Annals of Surgery, June, 1903.

triumphs of scientific surgery can be shown than some of the remarkable cases of visceral injury where stomach, bowel, liver, gall-bladder, and other viscera have been perforated, either by bullet or some other sharp instrument, and in which operation has been successfully performed before infection has had time to occur.

APPENDICITIS.

Appendicitis of the acute, perforating, or gangrenous type comes on so suddenly as often to constitute a peritoneal catastrophe and in a proportion of cases terminates fatally in so rapid a manner that the diagnosis is made only with great difficulty or not at all. Such cases, when I was a student, went undiagnosed and death was ascribed to peritonitis simply, a sufficient diagnosis in those days; and it was not till 1886 that we heard anything of this lethal malady which though it has slain its tens of thousands is now, thanks mainly to the labours of Fitz of Boston, who laid the foundation of our modern knowledge of the subject, brought under subjection in a very large percentage of cases. The disease is said to be on the increase, but I am not at all clear as to the truth of this, as there have been buried in our literary records for generations, fairly accurate accounts of dangerous inflammations occurring in the right iliac fossa and described vaguely as typhlitis, perityphlitis, paratyphlitis, &c., and both Copland and Burne in 1837 gave accurate descriptions of perforative appendicitis and its consequences. It is certainly more frequently diagnosed and more scientifically treated than it was, and it is a comfort to know that the operation, when undertaken early, is attended with an encouraging amount of success, and, as shown by Sir Frederick Treves, when treated in the quiescent period it is almost devoid of risk. Arguing from my own experience of operations in the quiescent period in a large number of cases without a death, and from that of many other surgeons at home and abroad, I have no hesitation in saying that had I an attack of appendicitis I should prefer accepting the infinitesimal risk of removal of the organ directly the attack was over to the decided risk of waiting for the next seizure, which might be one of the acute type. Even in the acute type of the disease operation, if undertaken early, as is the practice advocated by some surgeons, is very successful, and though we cannot expect it to be devoid of danger like the operation between the attacks, yet it is certainly very much safer than waiting for the gangrenous process to extend, for an abscess to burrow or to burst in various directions, for infection to invade the blood, or for the onset of complications of infinite variety and danger.

[Mr. Mayo Robson then discussed at length the various methods of hysterectomy for myoma and some of the operations on and about the liver for the evacuation of hydatids and abscesses, showing how many patients by the advance of modern surgery could be relieved of what quite recently were mortal conditions. He went on:—]

THE SURGERY OF THE BILE PASSAGES.

This is one of the most interesting episodes in abdominal work, for although the first cholecystotomy was performed so far back as 1867 by Bobbs of Indianapolis it is only within recent years that surgery has come to be recognised as the treatment for gall-stones. I performed my first cholecystotomy in 1885, since which time I have operated nearly 600 times on the gall-bladder and bile-ducts. When in 1889 I read a paper before the Clinical Society of London one of the leading London surgeons said to me, "Wherever did you conjure your gall-bladder cases from: we never see them here?" I referred him to the medical wards and to the post-mortem room of any of the hospitals, with the result that within a short time he found many cases requiring relief. At first cholecystotomy only was practised, with the result that the ducts were often left obstructed and fistula necessarily followed. It was thought to be a bold venture when Lawson Tait crushed a stone in the common duct, a procedure which I followed with success on a number of occasions, until Courvoisier in 1891 showed it to be better to incise directly the common duct. Common-duct operations, as performed by the upward incision and rotation of the liver, which I introduced some time ago, are now as easy as an ordinary cholecystotomy used to be, for the improved method enables the whole of the biliary ducts to be brought near to the surface and to be deliberately dealt with. Nothing could demonstrate this better than the results in my own practice in an experience of over 100 choledochotomies, for whereas in my first series before 1900 the rate of mortality was 23·8 per cent. in my last series it is only 1·5 per cent., and I have had a continuous series of 50 cases without a death; moreover, it must be borne in mind that nearly every one of these cases is not merely a successful operation but a life saved, for common duct cholelithiasis associated with infective or suppurative cholangitis and deep jaundice is a mortal malady.

It is interesting to recall the views that were held of cholelithiasis in the "seventies," when the pathology of the disease was ill understood and the dangers were not at all realised. The first real step in the study of the pathogenesis of gall-stones was made in 1886, when Bernheim showed the relation of typhoid fever to the development of cholecystitis and the next was in 1886 when Galippe demonstrated the bacterial origin of gall-stones. Now we may say that by whatever cause, whether through the blood or from the bowel, bacteria enter the bile channels, there is no longer a question that in bacterial infection of low virulence we have explained the etiology of cholelithiasis. Fortunately, gall-stones are usually easily diagnosed, the symptoms are classic and in the early stages before complications have supervened cholelithiasis is curable by surgical methods in 99 per cent. of cases, as I myself have demonstrated in a large series of operations; but if we wait for complications to supervene and for the onset of jaundice and various infections, or until cancer has invaded the liver and gall-bladder, which it does ultimately in 50 per cent. of cases in which jaundice is present, then there will be a very different tale to tell. Even yet we do not get these cases always in time and until the fact is grasped that medicine can, as a rule, only relieve and cannot cure cholelithiasis we shall be continually having to operate in the presence of serious complications, endangering life when operation is from five to ten times more dangerous than if it had been undertaken at an earlier stage. But you say, What about the cures at Carlsbad, Harrogate, and other spas? Well, the waters undoubtedly do relieve the catarrh so often associated with gall-stones; and for the rich who can afford to make periodical pilgrimages thither the troubles may for a time be tided over, until, in a considerable proportion of cases, the descent of the stone into the common duct or the supervention of cancer compels more active intervention; and fortunate it is for them if it be not too late. For the poor, to whom time wasted means starvation for those dependent on their wages, fortunately surgery holds out good hope of speedy cure.

The great reduction in mortality in surgery of the gall-bladder is due to an earlier diagnosis, a closer study of the pathogeny of the disease, and infinitely greater care in operative technique. Much work remains to be done in this region, for it is a difficult and complex field, less accessible than many other regions of the abdomen and often complicated by pancreatic troubles coexisting; but progress is steadily being made and every year shows real advance tending towards perfection.

THE SURGERY OF THE STOMACH.

The way to success in gastric operations has been paved with many failures and only recently has the surgeon been able to show what can be done in this branch of work. For instance, when gastrotomy was first performed by Sedillot and by those who followed him it was nearly always fatal, the chief reason being that the patients were never handed over to the surgeon until nearly moribund; of such were my first eight cases, of which six died. Even up to 1890 the mortality was so great that the operation was seldom advised, yet it can be done in so short a time and with so little disturbance that out of my last 24 cases all have recovered except one, leading to considerable prolongation of life in the malignant, and to the saving of life in the simple, cases. In the "seventies" anyone with carcinoma of the stomach was at once given up as hopeless, and only in 1879 was the first attempt made by Péan to remove a malignant pylorus, the first successful operation being performed by Billroth in 1881, when the operation was looked on with as much disfavour as was the first attempted complete gastrectomy a few years ago by Connor in America, yet Schlatter's patient a little later lived 14 months after complete gastrectomy and I can point to a man in good health on whom I performed almost complete excision of the stomach two and a half years ago and to others now well who have undergone partial gastrectomy. Professor Kocher's statistics in this branch of work are of great importance as showing that the radical operation may in some cases, if done thoroughly, prove curative, and my friend Mr. Jessop

has a patient now living from whom he removed the pylorus for cancer several years ago. I am firmly convinced that many deaths are ascribed to cancer when the disease is inflammatory and perfectly curable by the operation of gastro-enterostomy without removal of the tumour. This I can prove from my own experience in patients now living and well several years after an operation which at the time was thought would be only of a palliative nature. Nor was the palliative operation of gastro-enterostomy much better thought of at first, for although Wolfler successfully performed the operation in 1881, his patient surviving for four months, yet the mortality of 65·71 per cent. in the years between 1881 and 1885, of 47 per cent. in the period from 1886 to 1890, and of 33·91 per cent. from 1891 to 1896, though showing a steadily decreasing death-rate, yet presented so doleful a picture as to deter medical men from recommending their patients to submit to operation. Even so recently as 1900, when I gave the Hunterian Lectures on the Surgery of the Stomach, of the 1878 cases of gastro-enterostomy that I was able to collect from all sources the mortality was 36·4 per cent. But since that time the surgery of the stomach has made such rapid progress that of 103 posterior gastro-enterostomies which I myself performed up to December, 1902, for various diseases, including cancer, there was a mortality of only 3·8 per cent.

Until quite recently gastric ulcer, except for one or two of its complications, has been considered to be a subject for medical treatment from first to last. The profession is, however, becoming awakened to the fact that it is not the trifling ailment it was once considered to be and that it should from the first be taken seriously, for it is in the early stages that medical treatment can be employed to the best advantage and in the later stages that general treatment is so often followed by relapse or by serious complications. Leube, one of the greatest medical authorities on the subject, says that one-half or three-fourths of all cases will be cured by four or five weeks of treatment, but if not better in that time they will never be cured by medical treatment alone; and Einhorn says it is fatal directly and indirectly in 50 per cent. of cases when reliance is placed exclusively on medical treatment. It can be demonstrated that in the patients incurable by medical means surgery holds out a good hope of relief or cure in 95 per cent. of cases, as I have shown in an address recently given before the London Polyclinic. The subject is too large to enter minutely into, but from what I have stated now and in other places have given in detail it will be seen that in this, as in other diseases of the stomach, modern surgery has very great triumphs to record.

THE SURGERY OF THE PANCREAS.

The pancreas had practically received no attention from a surgical point of view up to Senn's classical experimental work in 1886 and even for some time after that the only interest centred around cysts, so that Greig Smith, writing in 1896, said, "The experience of the last ten years has added little to the work of Senn of Chicago." But what do we see to-day? That the subject is of such magnitude as to need a volume of considerable size to deal adequately with its pathology and surgical treatment. I myself have operated on nearly 100 cases of disease of the pancreas of various kinds. Acute pancreatitis is one of the most serious and fatal of diseases, often coming on with startling suddenness, and it is astonishing how it can have escaped the notice of pathologists until so recently. Fortunately, surgery has been able to interfere beneficially in some of these cases, especially those ending in suppuration, and as our knowledge of the subject increases we shall be able to do more both in the way of prevention and cure. Chronic pancreatitis, though recognised from a pathological point of view, was practically unrecognised as a subject for surgical treatment until I drew attention in June, 1900, to the facts derived from an experience extending over some years that many cases described as cancer of the head of the pancreas and leading to chronic jaundice, which ended fatally, were really cases of chronic pancreatitis that could be cured by draining the pancreatic duct indirectly through the bile passages; this has led to great success in the treatment of a class of cases previously treated as hopeless. As yet the treatment of cancer of the pancreas is very unsatisfactory, and whether we shall ever be able to do much for malignant disease in this situation the future alone will prove; for although a portion of the pancreas has been removed with success in one or two cases it is an operation not likely to be frequently repeated and the cure must be sought in that extended knowledge of cancer generally which we are all striving for. The treatment of cysts is most successful and it is now well established that by drainage we may reasonably expect to cure or materially to relieve the patient in a very large proportion (probably from 93 to 95 per cent.) of cases. Calculus of the pancreas is a disease about which very little has been heard and still less done but of which more will be recorded in the future. A case of removal of calculus was described by my friend Mr. A. Pearce Gould in 1895 in which the patient survived the operation for 12 days; there was one last year in which my friend Mr. B. G. A. Moynihan successfully removed a calculus through the duodenum; and in February of this year I operated and removed three calculi from the pancreas, one from the gland by the side of the common duct, one from the main duct which it was obstructing (that being reached through the duodenum), and one of about the size of a cobnut from the main pancreatic duct on the left of the spine, this being the first case in which the main pancreatic duct has been deliberately opened through the substance of the pancreas and stitched up again after removing the obstruction. The patient recovered. The more complete exposure of the pancreas which can now be obtained by the method I have suggested for exposure of the common bile-duct will give an impetus to pancreatic surgery and will render the operative technique both easier, safer, and more certain.

THE SURGERY OF THE INTESTINES.

The interrupted suture at first employed occupied so much time in application that many modifications were soon introduced and in 1885 Mr. Stanmore Bishop showed that there were no fewer than 33 distinct methods of enterorrhaphy and since probably as many more have been introduced. In 1887 Senn's plates were employed to facilitate the process of intestinal anastomosis and I remember what a great impetus was given to the surgery of the intestinal canal by Dr. Senn's very able paper and demonstration at the International Medical Congress in Copenhagen. In 1892, being dissatisfied with the methods then in vogue, I invented a decalcified bone bobbin shaped like a cotton reel which would form a temporary splint around which to apply two continuous sutures—one to the serous and another to the mucous margin of the new openings—which method has proved most useful and I feel sure has administered to whatever success I have had in this line of work. The continuous sutures applied over the bone bobbin considerably shortened the time of operation and left the union so safe and secure that in a large number of operations since performed on the hollow viscera I have continued to employ it with great satisfaction. As illustrating its utility the series of cases of posterior gastro-enterostomy performed by me up to the end of last year were all done by this method and in the four cases that died the union, as proved by necropsy, was perfect; moreover, I know that the anastomotic opening has not the tendency to contract that occurs after some of the other methods and as the bobbin dissolves within two or three days no foreign body remains to cause further trouble. In end-to-end junction of the divided bowel in enterectomy the decalcified bobbin has given me equal satisfaction and though from the nature of the cases the actual operative mortality has been greater yet in no case has the result been due to imperfect coaptation. In 1892 Dr. Murphy of Chicago invented his well-known metal button which, since it is employed without previous application of sutures, can be used very quickly and by its distinguished inventor as well as in the hands of other surgeons it has been adopted with great success. The chief disadvantages it presents are, first, that it is necessarily associated with sloughing of the compressed and coapted ends of the bowel; next, that a foreign body is left in the canal which sometimes produces ulceration and other troubles; and thirdly, that the opening has been found in some cases to contract and this necessitates a further operation. Along with many other surgeons I gave it a thorough trial, but soon reverted to the method of suture round a bobbin, and the general trend of opinion is now to rely on simple suturing with or without any mechanical support. Cases of tumour of the bowel when I was a student were given up as hopeless, though a little later colotomy was performed as a means of giving relief, which was of course merely temporary. At the present time such growths are removed before the supervention of obstruction and with very good results both immediate and remote; for instance, my colleague, Mr. H. Littlewood, recently reported a series of 14 colectomies

with 10 recoveries, and out of 38 enterectomies which I have performed 26 have recovered, but out of my last 16 in private 15 recovered, showing the progress that has been made in the operative technique.

It is astonishing what large portions of the intestinal tract may be taken away with safety; for instance, Mr. Barker removed five and a half feet of damaged bowel with success in a case of strangulated gangrenous hernia, and I have on several occasions removed part of the ileum, the cæcum, the ascending and part of the transverse colon, with recovery of the patient. In the first number of the *International Archives of Surgery* is the description of a case in which Professor Roswell Park removed eight feet nine inches of gangrenous small intestine, the patient being well a year later; and in the same paper reference is made to 17 other cases in which over six feet of bowel had been excised with recovery in 14; in one of these cases no less than 11 feet were removed. In 1884 colotomy had the enormous mortality of 31·6 per cent. for the lumbar and 53·1 per cent. for the inguinal operation, as shown by Dr. W. R. Batt, who collected the records of 351 cases; in 1889, under improved technique, the inguinal operation was reintroduced by Mr. H. W. Allingham, with the result that the mortality was diminished within a short time to under 10 per cent., even including cases of acute obstruction, though excluding the acute cases the mortality is under 5 per cent. Looking to the future it seems highly probable that colotomy will be largely replaced by the removal of the disease, for it has been clearly proved that there is no part of the lower bowel which cannot be safely excised if taken sufficiently early, and I can point to a number of patients living in comfort from whom I removed rectal cancer years ago, in one the patient being in good health ten years after. Mr. W. Watson Cheyne estimates the mortality of excision of the rectum at from 5 to 10 per cent. and refers to Kocher's statistics in which 28 per cent. of cases remained well from three to 16 years after proctectomy.

For the rational treatment of intestinal obstruction we owe much, first, to the anatomical researches of Sir Frederick Treves, and secondly to his admirable work on the pathology and surgery of the subject. Although there are vague accounts of a successful operation for volvulus in 1768, the surgery of the last century until within 20 years of its close had no history bearing on the subject of intestinal obstruction, and I can remember when it was considered no discredit to stand by with folded hands while a patient was dying from internal strangulation. Many of those present will remember it being proposed seriously less than 20 years ago, in one of the medical societies, by a very eminent surgeon, that operation could be frequently avoided by calling in the nearest policeman and suspending the patient head downwards with the knees bent over the constable's shoulders, who was then directed to jump up and down a number of times so as to displace the hernia or to undo a twist; this will show the state of intestinal surgery in the "eighties." At the present day the differential diagnosis has been so well worked out and the technique of operative work so much improved that no physician or surgeon long delays resorting to operation if relief be not soon obtained and the results as shown by numerous reports amply justify the change. Did time permit I could give numerous examples of the cure of acute intestinal obstruction by the division of bands, the untwisting of volvulus, the unfolding of intussusception, the reduction of internal hernia, and the removal of concretions, in all of which, but for the recent advances of surgery, the patients must inevitably have perished and all of whom would undoubtedly have died had they occurred in the "seventies."

[Mr. Mayo Robson then discussed the value of operative procedure in abdominal tuberculosis and strangulated hernia, going on to discuss the advances made in surgery with regard to the treatment of—]

THE ANOMALIES OF PREGNANCY.

Eminently satisfactory results are now obtained in that ancient operation, Cæsarean section, where at one *séance* two, or sometimes three, lives are saved and which in the hands of Murdoch Cameron, Leopold, Sanger, and other operators has been done in recent years with an extremely small mortality, whereas in the large maternity hospitals in Paris during half a century before the aseptic era, although the operation had been done 60 times, in no instance had the mother's life been saved, and in England the operation for similar reasons was condemned absolutely. I know of no operation that has given greater satisfaction than this one, for the patients are eternally grateful, which is truly the highest reward of the surgeon. Dr. J. M. Amand Routh has been kind enough to furnish me with statistics showing the improvement in the operation of hysterectomy performed at or near the full term of pregnancy for contracted pelvis, cancer of the cervix, or obstructing fibroids. From 1876 to 1881, out of 99 cases there was a mortality of 60·6 per cent.; from 1887 to 1901 out of 311 cases the mortality was reduced to 16·7 per cent.; and while the extraperitoneal treatment of the stump had a mortality of 31·3 and panhysterectomy one of 21, the retroperitoneal method of treating the stump only gave a rate of 16·6 per cent. Ovariotomy during pregnancy has been remarkably successful, the mortality for a large series of collected cases being only 5·19 per cent., and the recovery after operation being as satisfactory as in ordinary circumstances. Ectopic gestation until recently constituted a dark chapter in medicine; it was altogether misunderstood as to cause, pathology, symptoms, and treatment, and hundreds of lives were lost annually which are now saved by timely surgical intervention. To the genius of Lawson Tait, who utilised the post-mortem experience of Bernutz and Goupil published in 1886, and the clinical observations of J. S. Parry we owe the successful treatment of this otherwise fatal disease. Lawson Tait's work on this subject alone should be sufficient to establish a claim for him to be placed among the great benefactors of science and of humanity. As showing the success of his treatment from the first, up to 1887 he had operated 35 times for ruptured tubal pregnancy with only two deaths and in my valedictory address at the termination of office as President of the British Gynæcological Society in 1898 I was able to report, following on the same lines, 23 operations for ectopic gestation with one death. The subject has received much attention at the hands of Professor J. W. Taylor of Birmingham, Mr. J. Bland-Sutton, and others, but only recently has it been distinctly proved by four undoubted cases, one of which came under my care, that ovarian gestation is a possibility. The subject is replete with interest and it may be said without any fear of contradiction that this operation alone has saved many thousands of lives which, when I was a student, would have been sacrificed and probably certified as having died from internal hæmorrhage.

THE SURGERY OF THE KIDNEYS AND URETERS.

Although the dawn of renal surgery dates from August 2nd, 1869, when Simon of Heidelberg deliberately performed nephrectomy, the first successful operation in England was done by a member of your Council, my respected colleague, Mr. T. R. Jessop, an operation which I had the privilege of witnessing. Sir Thomas Smith advocated nephrotomy in 1869 before Simon's operation, but it was not until 1870 that Mr. Bryant first performed the operation and until 1880 that Mr. Henry Morris applied it to the removal of a calculus. As showing the advances that followed, the last-named surgeon was in 1898 able to report 34 nephrolithotomies with 33 recoveries, showing the invalidity of the objection which had before 1880 been urged against the proposal to operate on a kidney not already converted into a mere abscess sac, and proving that the conservation of the kidney by removal of the disease is infinitely better than the sacrifice of the organ which was at one time advocated. The next advance was due to Hahn who in 1881 described two cases in which he had performed the operation of nephropexy for the fixation of moveable kidney, a procedure which in proper cases confers great benefit on a class of patients who previously had to bear their troubles until the moveable organs were often converted into large fluid cysts owing to intermittent kinking of the ureters. By utilising the partly-stripped capsule and the posterior incision of Edebohl I have been gratified with the results, both immediate and remote, of the operation, which with little or no risk in properly selected cases has been the means of restoring many invalids to a state of health and comfort. Partial excision of the kidney as a conservative operation is the next advance to chronicle. Czerny in 1887 excised part of the organ for tumour, preserving the remainder of the kidney which seemed to be free from disease; this was followed by a number of conservative operations by Tuffier, Kimmell, Bloch, Morris, myself, and others, many of which have been completely successful; for instance, I know of a lady in perfect health from whom I removed a large wedge from the centre of the

right kidney for localised tuberculous disease some years ago; of another from whom I removed the upper half of the right kidney for growth which apparently started in the suprarenal capsule and who was well three years later; and of other cases in which formerly one would have considered it absolutely essential to remove the whole organ. The differentiation of diseases of the kidney—a great advance in diagnosis—has been rendered much more certain by catheterisation of the ureters, which I was privileged to be amongst the earliest to do in 1886; but to Kelly of Baltimore is due the credit of working out the subject systematically and demonstrating with what facility it may be done. Already, however, this is replaced by a much superior method, the idea of E. Lambotte of Brussels who in 1890 invented an instrument which when passed into the bladder collects the urine from each side and conveys it to two separate bottles. The invention in 1898 of a segregator by Harris of Chicago has still further extended the usefulness of this method, so that there is now no longer need for doubt in any case as to whether the disease is limited to one or involves both kidneys. The most recent advance in renal surgery has been in the treatment of chronic nephritis or Bright's disease, which was first drawn attention to by my friend Mr. Reginald Harrison who recommended renal puncture or incision in certain cases of chronic albuminuria, but to Edebohl of New York must be given the credit of adopting an original operation for the treatment of Bright's disease. He in 1893 deliberately exposed both kidneys, stripped their capsule, and fixed them in position in a young woman, aged 26 years. Frequent examinations during the five years showed in every instance normal conditions and the patient has recently married and is well. In March of this year Edebohl reported 51 cases of renal decapsulation and in 47 of these cases both kidneys were operated on at the same time. Out of this large number 22 are said to be improving from three to 15 months after operation. As yet it is too early to pronounce a definite opinion on the procedure but it is an undoubted fact that decapsulation does effect some improvement in this serious malady, and it may possibly prove effectual in saving life in those terrible cases where suppression of urine comes on after some trifling operation, such as catheterism, or after a chill, or in scarlet fever, just as surgery has effectually stepped in and saved life where suppression was due to obstruction of both ureters. We may certainly go so far as to say that no patient ought to be allowed to die from suppression of urine without the surgical question being considered.

[Mr. Mayo Robson then referred to the possibility of success attending the organised search into the cause of cancer, to recent successful developments in serum-therapy, and to Professor Wright's researches, as published in THE LANCET,[2] with regard to localised staphylococcus infection and concluded his eloquent address thus:—]

Gentlemen, I have tried to show that the advances in treatment during the past third of a century have been commensurate with our increased knowledge of disease and simply on account of time have I limited myself in a great measure to diseases of the abdominal cavity. I have tried to show what a close connexion exists between the science and art of our profession and how very necessary it is, if we are to continue our march of progress, that experimental research should not only be untrammelled by factious and unreasoning opposition, but that it should receive greater recognition, encouragement, and support at the hand of the public. I have tried to forecast the future and to show that while surgery has still great strides to make and many difficulties to conquer, such progress will be in a great measure intimately bound up with the work of the physician, the pathologist, and the bacteriologist, and I think the time will come when preventive measures such as I have portrayed will save much operative work and when it will be thought a greater triumph to prevent than to cure disease. We can see that methods and policies which were sufficient years ago are totally inadequate to day. We may modify but we cannot prevent the world's advance, and while times change men change with them. The medical profession is imbued with a spirit that half a century ago was undreamed of. Not only have apparently insurmountable difficulties been overcome, but habits of thought have been attained which have made such achievement possible, and a scientific attitude of mind has become characteristic of our profession, as it has of the leaders in every branch of the world's progress. In becoming more scientific it is a mistake to suppose that the medical profession has lost touch with higher beliefs. As Lord Kelvin has so happily stated it lately, "Science positively affirms creative power. We only know God in His works, but we are absolutely forced by science to believe with perfect confidence in a directive power, in an influence other than physical, or dynamical, or electrical force." There is no harm in free-thinking, for if we think strongly enough we are forced by science to a belief in a higher power, which is the foundation of all religion. In conclusion, I must thank you for giving me so patient a hearing and at the same time I would apologise for many conscious omissions which had time permitted would not have occurred. I trust, however, that what I have said will serve to show that we are one and all imbued with a desire to carry out our duties conscientiously and to live up to the privileges of our high calling.

The Milroy Lectures

ON

THE CAUSES, PREVALENCE, AND CONTROL OF PULMONARY TUBERCULOSIS.

Delivered before the Royal College of Physicians of London on March 5th, 10th, and 12th, 1903,

BY H. TIMBRELL BULSTRODE, M.A., M.D. CANTAB., D.P.H.,

INSPECTOR, MEDICAL DEPARTMENT, H.M. LOCAL GOVERNMENT BOARD; LECTURER ON PREVENTIVE MEDICINE, CHARING CROSS HOSPITAL MEDICAL SCHOOL.

LECTURE II. (*concluded*).[1]

Delivered on March 10th.

THE BEHAVIOUR OF TUBERCULOSIS IN ITALY.

IT would appear from the statistics[2] which are available for the kingdom of Italy that if we consider in one group all forms of tuberculosis there has been since the year 1888 a decided tendency towards decrease. In 1887 the mortality

TABLE X.—SHOWING THE MORTALITY IN ITALY FROM EVERY AND ALL FORMS OF TUBERCULOSIS PER 1,000,000 OF THE POPULATION FOR EACH OF THE YEARS FROM 1887 TO 1899.

—	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899
Disseminated tuberculosis	248	311	367	298	296	282	276	282	318	249	245	247	147
Pulmonary tuberculosis	1078	1084	1064	1071	1010	1022	977	1022	1024	1063	987	968	1092
Disseminated scrofula and lupus	113	101	98	93	85	81	70	70	64	64	60	53	48
Tuberculous meningitis and hydrocephalus	180	193	190	178	202	192	205	178	145	156	142	144	184
Tabes mesenterica and intestinal tuberculosis	462	421	391	355	377	367	357	329	327	332	295	289	275
Tuberculous disease of the joints	29	25	23	26	30	27	26	21	25	22	21	17	17
Tuberculosis of the bones	—	—	—	—	—	—	—	—	17*	26*	28*	36*	37*
Totals	2110	2135	2133	2021	2000	1971	1911	1972	1920	1917	1778	1754	1798

* Antecedent to the year 1895 tuberculous disease of the bones was classified with other diseases of the bones and not included among the deaths from all tuberculous diseases.

[2] THE LANCET, March 29th, 1902, p. 874.

[1] Lecture I. and the first part of Lecture II. were published in THE LANCET of July 11th (p. 73) and 25th (p. 206) respectively.

[2] Malattie Infettive e Diffusive, Ministero dell' Interno, IspettoratoGenerale della Santà Pubblica, Roma, 1901.

TABLE XI.—SHOWING THE DEATH-RATE PER 10,000 FROM PULMONARY TUBERCULOSIS IN THE REGIONS OF ITALY FROM 1888 TO 1899.

Region.	1888	1889	1890	1891	1892	1893	1894	1897	1898	1899	Mean of ten years.
Piedmont	12·3	12·2	13·0	12·1	12·5	11·7	12·1	12·0	11·8	12·86	12·3
Liguria	16·8	16·2	17·6	15·2	16·0	14·7	14·8	16·1	15·4	18·05	16·0
Lombardy	13·3	12·6	13·6	12·9	13·0	12·1	13·1	12·5	12·4	14·12	13·0
Venetia	10·8	10·5	10·2	10·3	10·2	9·0	10·4	10·3	10·04	10·74	10·2
Emilia	12·4	12·9	12·9	12·1	12·6	11·3	11·9	11·3	11·2	11·56	12·1
Tuscany	14·4	14·4	15·0	14·2	15·0	14·6	14·8	14·5	13·6	15·35	14·6
Marches	8·8	7·6	8·4	8·0	8·4	8·1	7·4	7·0	7·3	8·88	8·0
Umbria	9·9	8·7	9·5	9·7	8·9	7·8	7·8	8·2	8·3	8·15	8·7
Latium	14·8	15·0	14·1	13·6	16·4	15·0	14·5	13·4	12·5	14·10	14·3
Abruzzi	7·9	7·1	6·4	6·1	6·5	6·5	6·7	6·3	6·6	7·41	6·7
Campania	8·6	9·0	8·6	7·5	6·7	7·2	7·6	7·0	7·1	8·68	7·8
Apulia	9·3	8·8	8·0	8·0	7·0	7·8	7·4	7·6	7·9	9·77	8·1
Basilicata	4·9	4·5	3·9	4·0	3·5	3·4	3·8	3·4	3·4	5·00	4·0
Calabria	5·9	5·5	5·2	5·0	5·4	4·9	5·4	4·8	5·2	6·40	5·4
Sicily	7·9	7·3	7·5	7·0	6·5	6·6	6·9	6·3	6·4	7·83	7·0
Sardinia	8·9	8·4	9·2	9·1	9·0	7·8	10·4	9·2	9·2	12·06	9·4
The kingdom as a whole	10·84	10·64	10·71	10·10	10·22	9·77	10·22	9·87	9·68	11·04	10·31

N.B.—The rates for the several regions during the years 1895 and 1896 are missing from the table, but the rates for the kingdom for each of these years were 10·24 and 10·68 respectively.

from all forms of tuberculosis was 2110 per 1,000,000; six years later—i.e., in 1892—it had fallen to 1971, in 1896 to 1917, and in 1899 to 1798. When, however, we examine Table X[2] we shall find that as regards pulmonary tuberculosis the rate is practically stationary.

The behaviour of pulmonary tuberculosis varied materially in different regions, as will be seen by Table XI. The lowest rate for the ten years dealt with was 4 per 10,000 in Basilicata, while the highest rate was 16 per 10,000 in Liguria. The Italian rates for pulmonary tuberculosis are the lowest which I am able to place before you and they may, perhaps, be regarded by some persons as affording a strong argument for the adoption of the preventive measures which, as I pointed out in my first lecture, were in vogue in Italy many years ago.

THE BEHAVIOUR OF TUBERCULOSIS IN PORTUGAL.

I have been able through the kindness of Dr. H. W. Seager, who recently visited Lisbon, to procure certain statistics relative to the behaviour of tuberculosis in that city. (See Table XII.)

TABLE XII.—*Showing the Deaths from Pulmonary and other Forms of Tuberculosis per 10,000 of the Population in Lisbon.*

Years.	Pulmonary tuberculosis.	Percentage rise or fall	Other forms of tuberculosis.	Total.	Percentage rise or fall.
1881–85	41·8	—	19·6	61·4	—
1886–90	32·6	22·0 (−)	21·0	53·6	12·7 (−)
1891–95	33·3	2·1 (+)	18·6	51·9	3·2 (−)
1896–1900	35·3	6·0 (+)	6·3	41·6	19·9 (−)

These figures show that during the last 20 years there has been a very material fall from tuberculosis as a whole in Lisbon—i.e., a drop from 61·4 per 10,000 in 1881–85 to 41·6 in 1896–1900; but the figures also show that since 1886–90 there have been an increase in the rate for pulmonary tuberculosis and a greater decrease in the rate of all other forms of tuberculosis. It looks, in fact, as though there had been some transference of pulmonary tuberculosis from one group to another. These figures are of some little interest when thought of in connexion with the figures for Prussia which I dealt with earlier in the lecture.

[2] Statistica delle Cause di Morte nell' anno 1899, Roma, 1901. Ministero di Agricoltura, Industria e Commercio.

THE BEHAVIOUR OF PULMONARY TUBERCULOSIS IN NEW YORK.

I am desirous of drawing attention to the statistics of the city of New York because, as is well known, this city has been in the van in the matter of much that appertains to the control of consumption. The figures which I now submit (see Table XIII.) are taken from the highly interesting address communicated by Dr. Hermann Biggs to the London Congress. I have merely grouped them somewhat differently and given the rates per 10,000 in place of the rates per 1000 as furnished by Dr. Biggs. This arrangement tends to bring out the smaller differences in a manner which a rate per 1000 fails to effect.

TABLE XIII.—*Statistics relative to Pulmonary Tuberculosis from 1875 to 1899 inclusive in the Boroughs of Manhattan and New York (the Rates are Rates per 10,000).*

Year.	Annual rate.	Quinquennial rate.	Percentage rise or fall.	Year.	Annual rate.	Quinquennial rate.	Percentage rise or fall.
1875	39·9			1890	34·1		
1876	39·0			1891	31·1		
1877	36·5	38·3	—	1892	29·5	29·9	16·2 (−)
1878	39·2			**1893**	29·1		
1879	37·0			**1894**	25·7		
1880	38·9						
1881	42·7						
1882	41·0	40·3	5·2 (+)	1895	27·8		
1883	40·1			1896	26·2		
1884	38·6			**1897**	25·0	25·0	13·0 (−)
1885	37·2			1898	25·1		
1886	38·1			1899	26·0		
1887	35·6	35·7	11·4 (−)				
1888	34·6						
1889	33·0			1900	25·7	—	—

N.B.—The figures in black type represent the years in which definite administrative action aimed at the control of tuberculosis was inaugurated.

These figures appear to show that in the second quinquennium dealt with there was a rise in the death-rate, but that since that time there has been a continuous decline, this fall having been greatest between the third and fourth quinquennial periods, when there was a drop from 35·7 to 29·9 per 10,000, or a percentage fall of 16·2.

Turning our attention to the direct measures which have been taken in New York it will in the first place be noted that up to 1889 no such measures could have been operative. I will specify now briefly what were the administrative procedures adopted at the several dates indicated by the figures in black type. 1. In 1889 steps were taken with regard to the milk-supply and meat-supply and the public began to be educated in general preventive measures. 2. In 1893–94 notification, partly voluntary and partly compulsory, disinfection in certain cases, and the gratuitous bacteriological examination of sputum were introduced; educational methods were developed. 3. In 1897 compulsory notification, which, however, is only compulsory in a limited sense, was inaugurated. I will now deal separately with each of these measures. With respect to the year 1889 it will, perhaps, be fairest, seeing that there was an increase in the disease from 1880–84 and that we have practically two quinquennial periods on either side of 1889 available, if we compare the fall between 1880–84 and 1885–89 with that between 1890–94 and 1895–99. We see then that the fall in the first period—i.e., before any direct measures were taken or rather were likely to have become operative—was 4·6 per 10,000, or a percentage fall of 11·4, as compared with a fall of 3·9 per 10,000, or a percentage fall of 13·0, after the direct measures were inaugurated. It will be seen that the latter period embraces the coming into operation of the measures of 1893–94, as also those introduced in 1897. Let us now examine separately the effect of the measures taken in 1893–94 and we may fairly omit these two years from the calculation. As we have the figures for six years succeeding 1893–94 it will be convenient to take for comparison the six years preceding that period. In the period 1887–92 the rate fell from 35·6 to 29·5—i.e., a fall of 6·1 per 10,000, or a percentage fall of 17·1. In the years 1895–1900 the rate fell from 27·8 to 25·7—i.e., a fall of 2·1 per 10,000, or a percentage fall of 7·6. Finally, let us examine the effect of the measures taken in 1897, and here we are only able to compare the three years preceding that date with the three years succeeding it. From 1894–96 the rate rose from 25·7 to 26·2—i.e., a rise of 0·5 per 10,000; from 1898–1900 it rose from 25·1 to 25·7—i.e., a rise of 0·6 per 10,000.

So far, therefore, as can be determined by the figures it is difficult to avoid the suggestion that in certain instances the measures have exercised an inhibitory effect upon what may be termed the natural fall of the disease. I am altogether averse to believing that the admirable work performed by the sanitary authorities of New York, under the leadership of Dr. Hermann Biggs, has been without good effect, and it would seem more probable that there have been other and as yet undetected factors in operation which are distorting the issue. It is possible that more accurate diagnosis has had the effect of lessening the rate of the fall which previously manifested itself or that some other fresh factor has within recent years exerted its influence. But I bring these figures to your notice because of the importance of the subject and because such figures are being at times referred to as an illustration of what may be effected by well-devised and energetically applied preventive measures. The figures show, in my view, the difficulty of demonstrating statistically the results of measures which must upon general principles be operative in the direction of reducing the disease.

It may be mentioned in passing that Dr. Hermann Biggs has recently made some interesting calculations as to the cost of tuberculosis to the community. He estimates that the annual loss to the United States of America from the ravages of the tubercle bacillus at £66,000,000 and the value of lives lost in the city of New York alone (estimated at £300 per death) at £300,000. But by adding to this the loss incurred by enforced idleness prior to death Dr. Biggs arrives at the total annual loss of £4,600,000 for New York alone. Against these figures he places an expenditure of £100,000 annually on preventive measures.[4]

Before finally taking leave of the figures appertaining to the great metropolis of the West I would present to you for purposes of comparison the statistics of the county of London, for which I am indebted to my friend, Mr. Shirley Murphy, who has done such admirable service with the statistical material relative to the vast population over which as county medical officer of health he presides. I have placed in parallel columns the quinquennial rates for each period, merely adding that up to the end of 1899 practically no direct measures against pulmonary tuberculosis were taken in London. As I have already stated at the beginning of this lecture, comparisons between the statistics of different countries are of very limited value. If the comparison in this instance is of any value it tends to show that the rate of fall in the New York figures has been within recent years greater than that for London, but this may be in some measure accounted for by the fact that the scope for decline is less in London than in New York.

[4] Brit. Med. Jour., Feb. 14th, 1902.

TABLE XIV.—*Showing the Death-rate from Pulmonary Tuberculosis per 10,000 of the Population.*

Years.	New York.	Percentage fall or rise.	London.	Percentage fall or rise.
1875–79	38·3	—	25·47	—
1880–84	40·3	5·2 (+)	22·44	11·9 (−)
1885–89	35·7	11·4 (−)	19·65	12·4 (−)
1890–94	29·9	16·2 (−)	18·91	3·8 (−)
1895–99	26·0	13·2 (−)	17·61	6·9 (−)
1900–02	—	—	17·1	—

THE BEHAVIOUR OF TUBERCULOSIS IN HAVANA.

But now let me draw your attention to another page of American history and let us consider what the Americans have done for tuberculosis in Havana. It is instructive to note the work which in one or another direction has been carried out in the city of Havana since the American occupation and I herewith give the mortality figures for tuberculosis from 1872 to 1901. The remarkable feature in Table XV. is the reduction in the mortality during the years

TABLE XV.—*Showing the Total Deaths per Annum from Tuberculosis in Havana from 1872 to 1901.*

Year.	Number of deaths.	Five-yearly averages.	Year.	Number of deaths.	Five-yearly averages.
1872	1415		1887	1527	
1873	1339		1888	1326	
1874	1467	1480·2	1889	1382	1476·6
1875	1466		1890	1601	
1876	1714		1891	1547	
1877	1747		1892	1530	
1878	1714		1893	1332	
1879	1733	1602·0	1894	1314	1475·4
1880	1629		1895	1623	
1881	1187		1896	1578	
1882	2427		1897	1926	
1883	1471		1898	2794	
1884	1497	1564·2	1899*	981	1490·4
1885	1239		1900*	851	
1886	1187		1901*	900	

* Years of the American occupation. Average for last three years 910·7.

of the American occupation, and this reduction acquires an increased interest from the preventive standpoint when it is found that the Americans during their stay made vigorous efforts directly to combat the disease. In his report dated 1902 Major Gorgas of the United States army, who acted as chief medical officer in Cuba, states that the staff, having practically abolished yellow fever, turned their attention to tuberculosis. Under one of the officers a comprehensive plan of campaign against tuberculosis was undertaken. A dispensary was established and arranged in an attractive manner and the municipal poor were invited to apply for assistance. Medical inspectors were sent to tenement houses and to tobacco manufactories and by means of the several agencies employed no less than 2500 cases of tuberculosis were upon the lists in 1902. The name of each person was entered upon a card and the patients were supplied with popular literature relative to the disease and its prevention. Major Gorgas concludes his report with this hopeful prophecy: "I believe that if this system can be continued for four or five years tuberculosis can be eradicated as yellow fever has been. We had 900 deaths last year from tuberculosis; placing the average length of a case of tuberculosis

at three years, which is a longer period than is generally given for this disease, we would have 2700 cases of tuberculosis on hand in the city. As we have at present 2500 located and carded it can be seen how thorough and successful our system of reporting has been."

Some epidemiologists in this country will regard the prophecy of Major Gorgas as somewhat too optimistic. They will wish to know something as to the introduction of better diagnostic methods and as to better registration made use of by the Americans before they can accept the figures as a basis for the inferences arrived at. For my own part I will withhold criticism, for as regards yellow fever it must, I think, be admitted by all fair-minded persons that the work of the Americans in Havana has resulted in perhaps what must be regarded as the most remarkable victory ever achieved by preventive medicine. These Havana statistics with regard to tuberculosis furnish the most hopeful picture which I shall be able to show you. If they are sound they serve to show what an enormous amount may be effected by well-organised education and without the aid of either sanatoriums or hospitals for advanced cases.

And here, Mr. President, I would ask for your indulgence while I have thrown upon the screen a table which has been taken from an address recently delivered by Sir Patrick Manson before the Epidemiological Society of London and which illustrates the behaviour of yellow fever in Havana during the period of the American occupation (see Table XVI.). I make this request, not only because the figures have obviously some bearing upon those we have just considered, but also because I should be glad to be allowed to show here my deep appreciation of the epoch-making and truly heroic work of our American *confrères* in connexion with the etiology, the pathology, and the control of yellow fever.

This table apparently teaches us many lessons. It shows us what may be done by a vigorous and dominant race, sparing no time, energy, or expense to apply the lessons learnt, not in the laboratory, but in wards in which men react to the tuberculin test and the application of the same test to each traveller reaching our shores. We can act in this fashion, but only to an uncertain degree, in the acute specific diseases, lasting at most two months, but there are obviously difficulties in applying the same method to a disease from which apparently some 25 per cent. of the people suffer at one or another period of their lives and for prolonged periods.

THE BEHAVIOUR OF PULMONARY TUBERCULOSIS IN NORWAY.

I am anxious to place before you the statistics of Norway, because in my last lecture I shall draw attention to some very embracive measures which have recently been brought into operation for the control of this disease. For these statistics (see Table XVII.) I am indebted to Dr. Holmboe, the Director of the Civil Medical Service. It will be seen from these figures that the disease in question is evincing an upward rather than a downward tendency.

TABLE XVII.—*Showing the Death-rate from Pulmonary Tuberculosis per 10,000 of the Population in Norway.*

Year.	The kingdom.	The towns.	The rural districts.
1893	18·0	27·0	15·0
1894	18·0	28·0	15·0
1895	18·7	29·0	15·0
1896	19·0	26·0	16·0
1897	20·0	27·0	17·0
1898	21·0	29·0	17·0
1899	22·0	29·0	19·0
1900	22·0	27·0	20·0

The average rates for the three years 1898–1900 ranged in different parts of the kingdom from 11·0 to 45·0 per 10,000.

TABLE XVI.—SHOWING THE BEHAVIOUR OF YELLOW FEVER IN HAVANA.

Months.	1890-91	1891-92	1892-93	1893-94	1894-95	1895-96	1896-97	1897-98	1898-99	1899-1900	1900-01	Average.	1901-02*	1902*
April	13	5	8	8	4	6	14	71	1	2	0	12·00	0	0
May	23	7	7	23	16	10	47	88	4	0	2	18·81	0	0
June	38	41	13	69	31	16	46	174	3	1	8	40·00	0	0
July	67	66	27	118	77	88	116	168	16	2	30	70·45	1	0
August	60	66	67	100	73	120	282	102	16	13	49	84·36	2	0
September	35	65	70	68	76	135	166	56	34	18	52	70·27	2	0
October	22	48	54	46	40	102	240	42	26	25	74	66·27	0	0
November	15	24	52	28	23	35	244	26	13	18	54	48·36	0	0
December	9	17	33	11	29	20	147	8	13	22	20	28·90	0	0
January	10	15	15	7	15	10	69	7	1	8	7	14·90	0	0
February	3	10	6	4	4	7	24	1	0	9	5	6·63	0	0
March	4	1	4	2	2	3	30	2	1	4	1	4·90	0	0
Totals	307	365	356	484	390	552	1385	745	128	122	302	466·85	5	0

* Year of American occupation.

N.B.—This table is taken from a paper recently read before the Epidemiological Society of London by Sir Patrick Manson.

freely allowed themselves to be experimented upon in order to prove or to disprove a laboratory thesis. The table illustrates, too, what victories may be secured for preventive medicine when she is engaged in warfare with a foe which is itself the host of the specific parasite against which her efforts are directed. In the case of yellow fever the war is against the *stegomyia fasciata* and its larvæ. Both may be destroyed. But in tuberculosis the host, or rather the only host with which we are here concerned, is the human species, and we can destroy neither the mother nor her progeny, nor can we, for it may be for years, separate the one from the other.

Were we dealing with bovine tuberculosis alone we might, by adopting in their entirety the methods of Professor Bang, practically eliminate bovine tuberculosis, but the only method which occurs to me of at once stamping out tuberculosis in the human species is to segregate all those who

THE BEHAVIOUR OF PULMONARY TUBERCULOSIS IN ENGLAND AND WALES.

Most of my hearers are, I expect, fully acquainted with the behaviour of pulmonary tuberculosis in this country and I will therefore devote but a short space to its consideration. I have, however, been curious during my researches to ascertain how far Professor Koch's thesis, that the decline and the death-rate in most civilised countries are to be ascribed mainly to the better knowledge of the disease which has resulted from the discovery of the bacillus, receives illustration in this country.

In order to apply this view to England and Wales I have taken the rates for pulmonary consumption for each of the three five-yearly periods preceding the period 1881–85, during which time the tubercle bacillus was discovered, and I have compared these rates with those of the three five-yearly periods which succeeded 1881–85. After due consideration,

this appears to me to be the fairest method, but I shall be very glad to reconsider the question in the light of any other grouping which anyone may be good enough to suggest.

The comparison is shown in the accompanying table (Table XVIII.) and from it we learn that during what we may term the 15 pre-bacillary years the death-rate per 10,000 from phthisis fell from 24·4 to 20·3, that is 4·1 per 10,000, whereas during the 15 years succeeding the period during which the bacillus was discovered the rate fell from 16·3 to 13·2, that is to say 3·1 or 1 per 10,000 less than it fell in the pre-bacillary stage.

TABLE XVIII.—*Showing the Deaths from Pulmonary Tuberculosis in England and Wales per 10,000 of the Population for each Quinquennial Period from 1866 to 1900.*

1866–70	24·4	1881–85 ...	18·5	1886–90	16·3
1871–75	22·1			1891–95	14·6
1876–80	20·3			1896–1900	13·2
(Difference 4·1—i.e., a percentage fall of 16·8.)				(Difference 3·1—i.e., a percentage fall of 19·0.)	

We have then a slightly increased rate of fall after 1881–85 as compared with the rate prior to that period. Obviously the rate decreases as the base line is reached, but so far as can be gauged by the figures there was some factor—certainly not the knowledge of the bacillus involved—which was acting in the pre-bacillary period with a force almost as great as was the case during the 15 succeeding years in which a more intimate knowledge of the morphology and biology of the tubercle bacillus has been disseminating.

THE BEHAVIOUR OF PULMONARY TUBERCULOSIS IN AUSTRALASIA.

I am indebted to Major J. S. C. Elkington for drawing my attention to an interesting account by Mr. T. A. Coghlan, statistician of New South Wales, on the behaviour of pulmonary tuberculosis in Australia.[5] Mr. Coghlan points out that although pulmonary tuberculosis claims more victims than any other disease, the death-rates from this disease are lower in Australasia than in other parts of the world. This is the case notwithstanding the fact that as the

TABLE XIX.—*Showing the Deaths from Pulmonary Tuberculosis per 10,000 living in Australasia.*

State.	1871–75.	1876–80.	1881–85.	1886–90.	1891–95.	1896–98.
New South Wales...	9·28	10·16	11·41	9·90	8·64	7·90
Victoria	12·02	13·13	14·10	14·55	13·32	12·37
Queensland	10·93	13·01	17·31	13·35	10·93	9·39
South Australia ...	8·92	10·28	10·60	10·63	9·95	8·75
Western Australia	*8·58	8·53	8·57	9·30	7·51	6·51
Tasmania...	10·13	9·85	10·76	9·79	8·54	7·36
New Zealand	*3·72	8·46	9·15	8·39	8·15	7·93
Australasia	10·09	11·06	12·22	11·43	10·25	9·27

* Four years, 1872–75.

TABLE XX.—*Showing the Proportion per cent. of Deaths from Pulmonary Tuberculosis to Total Deaths in Australasia.*

State.	1871–75.	1876–80.	1881–85.	1886–90.	1891–95.	1896–98.
New South Wales...	6·19	6·31	7·27	7·17	6·77	6·58
Victoria	7·69	8·59	9·62	9·05	9·45	8·73
Queensland	6·09	7·69	9·06	8·60	8·52	7·41
South Australia ...	5·63	6·90	7·21	8·47	8·19	7·35
Western Australia...	*5·13	5·99	4·98	5·82	4·60	3·84
Tasmania...	6·43	5·96	6·72	6·46	6·50	6·01
New Zealand	*6·46	7·14	8·32	8·50	8·03	8·47
Australasia	6·61	7·35	8·26	8·19	8·04	7·49

* Four years, 1872–75.

Australian climate is regarded as favourable to those who suffer from consumption many patients afflicted with this disease are imported into the colonies for curative purposes; indeed, it is estimated that some 7 per cent. of those who die from pulmonary tuberculosis in the Australian colonies have been resident therein less than seven years. The accompanying tables (Tables XIX. and XX.), which are taken from Mr. Coghlan's work, would seem to show that up to 1885 pulmonary tuberculosis was on the increase in all the colonies of Australasia, but that since that date a steady decline has taken place.

As regards the separate colonies Victoria yields the highest death-rate, Queensland coming next, and Western Australia last. With respect to the high Queensland rate both Mr. Coghlan and Dr. A. Jefferis Turner[6] attribute it to the excessive mortality from pulmonary tuberculosis of the South Sea Islanders and in this connexion Dr. Turner furnishes some tables which tend to the conclusion that in Queensland this disease among the white population is on the decrease.

It will be seen from the accompanying table (Table XXI.), compiled by Dr. Turner, that during the period 1891 to 1900 the tendency of pulmonary and other forms of tuberculosis has been slightly downwards, whereas the tendency of pneumonia, cancer, and heart disease has been upwards.

TABLE XXI.—*Showing the Mortality in Queensland from Consumption, other Tuberculous Diseases, and all Tuberculous Diseases, as compared with the Mortality from Pneumonia, Cancer, Heart Disease, and Typhoid Fever per 100,000 Mean Population in each year.*

Year.	Deaths per 100,000 from						
	Consumption.	Other tuberculous diseases.	All tuberculous diseases.	Pneumonia.	Cancer.	Heart Disease.	Typhoid Fever.
1891	124	17	141	42	33	21	26
1892	102	23	125	54	31	20	30
1893	112	22	134	61	29	31	26
1894	102	20	122	69	36	25	23
1895	93	15	108	66	42	35	16
1896	95	19	114	81	39	43	28
1897	87	14	101	69	39	40	38
1898	85	17	102	73	46	40	30
1899	80	16	96	58	48	47	29
1900	87	15	102	68	47	40	28

But the fall in the death-rate from tuberculosis, so far as the white population is concerned, is only apparent and it will be seen from the next table (Table XXII.) that when the deaths are separated out the decrease is due to the diminishing number of Pacific Islanders whose deaths are attributed to pulmonary tuberculosis.

TABLE XXII.—*Showing the Number of Deaths in Queensland from Consumption classified according to Birthplace.*

Year.	Birthplace.		
	Pacific Islands.	Australasian States and Colonies.	Elsewhere.
1891	187	57	257
1892	128	52	243
1893	124	89	263
1894	117	63	266
1895	95	87	238
1896	106	86	252
1897	91	82	245
1898	65	89	267
1899	66	110	231
1900	79	114	234

A further study of the figures, however, reveals the extremely interesting fact that the augmented mortality among the whites is wholly to be attributed to the deaths of those born within the Australian dominions, there having

[5] The Seven Colonies of Australasia, 1899–1900, T. A. Coghlan.

[6] Report on the Proceedings of the International Congress for the Prevention of Tuberculosis held in London in the year 1901, by A. Jefferis Turner, M.D. Lond., D.P.H. Cantab., Honorary Representative of the State of Queensland at the Congress.

been during the period 1891 to 1900 a decreasing mortality among persons born outside Australasia, a fact which will be apparent from the figures in Table XXIII.

TABLE XXIII.—*Showing the Number of Deaths in Queensland from Consumption, excluding the Pacific Islanders, with the Percentage born within and without the Australasian Colonies.*

Year.	Number of deaths.	Percentage born within Australasian colonies.	Percentage born elsewhere.
1891	314	18·2	81·8
1892	295	17·6	82·4
1893	352	25·3	74·7
1894	329	19·1	80·9
1895	325	26·8	73·2
1896	338	25·4	74·6
1897	327	25·1	74·9
1898	356	25·0	75·0
1899	341	32·3	67·7
1900	348	32·8	67·2

At first sight this disparity might probably be attributed to the fact that year by year fewer consumptives are sent to Australasia, but according to Dr. Turner's figures this inference is not a sound one. He assumes that the average duration of life of a consumptive patient is about three years and that of the immigrants who are suffering from consumption when they arrive in Australasia only a minority survive five years, while the number of those who survive for over ten years is too small to influence the figures. Moreover, against the few who thus survive have to be placed those who contract the disease within ten years of their arrival. In order to bring out this point Dr. Turner has constructed the next table (Table XXIV.) relative to the number of deaths occurring amongst immigrants during each succeeding quinquennial period of residence.

Dr. Turner's method of attacking this table is as follows. He assumes that if the majority of immigrants who eventually die from consumption were suffering from the disease on arrival the larger proportion of the total deaths would be found in the first column relative to the first five years of residence and that each succeeding period of residence would yield a less abundant harvest. Clearly this is not the case, and the large number dying after 20 years' residence would seem to support Dr. Turner's view that the majority of immigrants dying from consumption in Queensland have contracted the disease in that colony.

TABLE XXIV.—*Showing the Number of Deaths in Queensland from Consumption of Persons born elsewhere than in Australasia and the Pacific Islands resident in the Colony.*

Year.	Less than 5 years.	5–10 years.	10–15 years.	15–20 years.	Over 20 years.	Unspecified.
1891	50	80	29	24	52	22
1892	45	70	30	27	52	19
1893	35	62	35	32	81	18
1894	25	41	64	27	91	18
1895	18	35	60	22	83	20
1896	18	34	70	32	89	9
1897	11	38	63	32	84	17
1898	24	21	62	50	102	8
1899	25	20	46	48	79	13
1900	20	10	41	49	96	19
Total during 1891–1900 ...	271	411	500	343	808	163
Percentage at each period of residence (excluding those unspecified ...)	11·6	17·6	21·4	14·7	34·6	—

In endeavouring to explain the increasing number of deaths from phthisis among the native-born population Dr. Turner concludes that ten years ago only a small proportion of such native-born population had reached early adult life or the period at which the disease claims most victims. As this age-group period has increased so also has the number of deaths from phthisis. The inference from these conclusions would seem to be somewhat disquieting if it is, as I imagine, that the resistance of the native-born Australian against the tubercle bacillus is less than the resistance of those who have been born elsewhere.

A similar method of reasoning to that adopted here was employed by Hirsch when considering the excessive mortality from pulmonary tuberculosis in the prisons of England. It was alleged by the defenders of the prisons that the prisoners brought the disease with them, but Hirsch pointed out that most of the deaths from phthisis did not occur until the later years of the term of imprisonment. Few persons would, I expect, be prepared to maintain that the conditions of prison life at that time were such as to favour the surviva

TABLE XXV.—SHOWING THE DEATH-RATES FROM PULMONARY TUBERCULOSIS IN SCOTLAND PER 10,000 PERSONS LIVING.

Year.	Scotland.		Principal town districts.		Large town districts.		Small town districts.		Mainland rural districts.		Insular rural districts.	
1883	22·2		27·9		23·5		20·6		15·4		17·2	
1884	20·7		25·3		21·8		18·8		15·2		20·5	
1885	20·5	20·5	25·0	25·0	20·9	21·8	19·4	19·1	15·1	15·0	16·3	17·1
1886	20·4		24·6		22·2		18·5		15·3		15·1	
1887	18·8		22·0		20·5		18·0		13·9		16·2	
1888	17·6		20·4		19·2		16·5		13·8		16·0	
1889	18·0		20·9		18·6		17·1		14·2		16·1	
1890	19·3	18·0 (−12·2 per cent.)	22·8	21·2 (−15·2 per cent.)	19·7	19·0 (−12·8 per cent.)	18·3	16·9 (−11·5 per cent.)	14·8	13·8 (−8·0 per cent.)	17·1	16·1 (−5·8 per cent.)
1891	18·4		21·8		20·1		17·4		13·4		16·3	
1892	16·8		19·9		17·2		15·3		12·9		14·9	
1893	17·0		19·9		17·5		15·8		13·2		14·8	
1894	17·4		20·3		17·8		16·1		13·6		13·0	
1895	18·6	17·4 (−3·3 per cent.)	21·3	20·0 (−5·7 per cent.)	20·4	17·8 (−6·3 per cent.)	17·3	16·3 (−3·6 per cent.)	14·6	13·8	15·0	14·1 (−12·4 per cent.)
1896	16·6		18·6		16·1		16·7		13·4		13·7	
1897	17·2		19·7		17·3		15·8		14·3		14·2	
1898	16·8	(3 years) 16·7 (−4·0 per cent.)	18·8	(3 years) 18·8 (−6·0 per cent.)	17·8	(3 years) 17·5 (−1·7 per cent.)	15·1	(3 years) 15·0 (−8·0 per cent.)	14·3	(3 years) 14·1 (+ 2·2 per cent.)	15·8	(3 years) 16·3 (+ 15·6 per cent.)
1899	16·7		18·7		17·8		15·1		14·0		14·9	
1900	16·6		18·8		16·9		14·7		13·9		18·2	

of a previously tuberculous subject and the problem at that date seems somewhat parallel to that presented by certain asylums for the insane at the present day. I regret that time will not allow me to put before you some interesting figures relative to pulmonary tuberculosis in the colony of Victoria which have been sent to me by Dr. Astley Greswell, its distinguished medical officer of health.

THE BEHAVIOUR OF PULMONARY TUBERCULOSIS IN SCOTLAND.

The statistics for Scotland, as a whole, as furnished by the Registrar-General for Scotland, afford indications of a steady decline for the whole period for which comparable figures are available, and it will be seen that the rate per 10,000 fell from 20·5 in 1883–87 to 16·7 for the three years 1898–1900. The rate of decline has been greatest in "principal town districts" although the actual rates are still higher than in any of the six groups comprised in the accompanying table (Table XXV.) It will be seen, too, that a decline is manifested in both the large and the small town districts. The last two columns, which relate to the mainland and insular rural districts, do not afford evidence of a very encouraging nature, as in both groups a rise is apparent during recent years, that in the last column being very considerable.

THE BEHAVIOUR OF PULMONARY TUBERCULOSIS IN THE ISLE OF MAN.

The social conditions of the population of this island are such as to afford a study of considerable interest, and Dr. C. A. Davies of Ramsey recognising this fact has set himself the task of ascertaining the behaviour of tuberculosis among the Manx population. Here we have a sea-girt, hilly, and wind-swept island with an equable climate, a relative absence of frost, snow, and fog, and much sunshine. It is situated far from the mainland and possesses a population engaged in pursuits the majority of which are the reverse of sedentary in nature and which are carried on under out-door conditions such as might be prescribed by a modern physician for those suffering from a hereditary proclivity towards the tubercle bacillus. Yet the statistics *quâ* pulmonary tuberculosis show that the disease has exercised a heavy incidence on the population. In 1883 the late Mr. A. Haviland, the author of the "Geographical Distribution of Disease," showed that the annual death-rate from pulmonary tuberculosis in the Isle of Man is excessive as compared with that of the mainland, and Dr. Davies writing in *Tuberculosis*[7] has brought the figures up to 1897. He compares the figures for each of the four divisions of the county, and although the rates relate in the one case to three years and the other to 15 years they are well worth reproducing. Table XXVI. shows the prevalence of the disease in the several parishes of the island.

TABLE XXVI.—*Showing the Death-rate from Pulmonary Tuberculosis per 10,000 living in the Isle of Man.*

—	1880–82	1883–97	—	1880–82	1883–97
Isle of Man ...	31·63	25·70			
Western:			Eastern:		
Peel	29·65	24·66	Douglas ...	29·46	27·19
German ...	29·70	16·02	Onchan	24·44	15·30
Patrick ...	30·47	22·78	Lonan	37·65	41·17
Michael ...	27·22	15·19	Braddan ...	35·40	30·44
Ballaugh ...	41·19	26·66	Marown ...	27·12	21·12
Northern:			Southern:		
Ramsey ...	26·89	21·41	Castletown ...	32·24	21·40
Maughold	23·24	23·27	Malew	33·39	20·23
Lezayre ...	29·31	29·04	Santon	22·67	24·13
Andreas ...	36·10	26·91	Arbory	44·54	24·01
Bride	65·83	25·07	Rushen	39·88	29·76
Jurby ...	25·29	27·57			

Approximately speaking the Manx death-rate from pulmonary tuberculosis was at the dates to which the figures relate double that of the mainland.

Dr. Davies has examined the several factors which are usually regarded as operative in the production of phthisis, such, for instance, as dampness, malnutrition, overcrowding, unwholesome occupations, and so on, and he finds in none of these an adequate explanation of the excessive prevalence of the disease. He then discusses in a highly interesting fashion the constitutional idiosyncrasies of the population, and the conclusion at which he arrives is that the constant intermarrying of the inhabitants which has resulted from the physical configurations and the consequent clannish tendencies of the inhabitants has led to what he terms a "prophthisical constitution." He finds that such intermarrying has prevailed more particularly in the parishes of Bride and Lonan, both of which have occupied exceptionally isolated positions and both of which, as is seen by the table given above, yielded in 1880–83 exceptionally high rates from phthisis. Dr. Davies, after referring to the manner in which the several portions of the island were until recently cut off from one another by the physical condition of the country, adds: "Great excitement was felt against any man who married a wife from any but his own parish. ..... The natural result is that the inhabitants of such a parish as Bride or such a village as Laxey have been intermarried and inbred to such an extent that one is not surprised to hear that they are all related." As he observes it is impossible to tell precisely what are the conditions which may form invulnerability or *resistance* against certain diseases, but that it would appear clear that "want of resistance does not necessarily imply a weakly and enfeebled constitution." The reflections contained in Dr. Davies's paper are most suggestive and his thesis seems to be fairly well supported by the facts, but it is a little difficult to explain the fall from 65·83 to 25·07 in the case of Bride or the rise which has apparently taken place in the rates for Lonan. It would be interesting to know to what extent emigration has taken place from the Isle of Man and whether the exodus of the fit and the retention of the unfit may have played a part in bringing about this excessive prevalence. But whatever may have been the main factors at work in producing this excess of tuberculosis such factors appear in later years, save in one or two parishes, to have operated with less vigour than formerly.

THE BEHAVIOUR OF TUBERCULOSIS IN IRELAND.

I will, in conclusion, and in, I fear, a somewhat impressionist fashion, bring the figures for Ireland to your notice. I do this because we have presented therein a problem which seems to me to afford a most promising field for subsequent study. The Registrar-General for Ireland in his thirty-eighth detailed report furnishes a comprehensive table showing the behaviour of all forms of tuberculosis in Ireland since 1871, and Mr. T. J. Stafford, Medical Commissioner of the Local Government Board for Ireland, has been good enough to procure for me, in addition, the figures for the period 1864–70. It may be seen from all these figures, which are herewith reproduced (Table XXVII.), that since the earliest period for which statistics are available there has been in Ireland as a whole a steady *increase* in the disease here in question. From 1864–70 the average death-rate from all forms of tuberculosis was 25 per 10,000. For the decade 1871–80 it was 26, for the decade 1881–90 it was 27, and during the last decade 1891–1900 it reached 28 per 10,000. In the year 1901 this rate was still maintained. These are the rates for all forms of tuberculosis. But as we are considering in these lectures pulmonary tuberculosis alone wherever possible I have obtained the figures for this disease for the last four census years. By taking the census years alone we are on relatively safer ground than when estimates alone are considered and I herewith give the figures for the four last census years, furnishing in addition the census population of Ireland, and also, for comparison, the rates for England and Wales. I am able, through the kindness of Dr. J. F. W. Tatham, to furnish the rate for England and Wales for 1901.

TABLE XXVII.—*Showing the Death-rate in Ireland from Pulmonary Tuberculosis per 10,000 Persons Living.*

Census year.	Population of Ireland.	Death-rate for Ireland.	Death-rate for England and Wales.
1871	5,412,377	19·2	23·4
1881	5,174,836	19·3	18·2
1891	4,704,750	21·3	15·
1901	4,458,775	21·4	12·6

[7] Vol. i., No. 5.

It will be seen that the increase was greatest between 1881 and 1891 and that the difference between 1891 and 1901 was but slight. Table XXVII. is also instructive as showing that in 1871 the death-rate from pulmonary tuberculosis in Ireland was 4·2 per 10,000 below that of England and Wales. In 1901 the English rate was 8·8 per 10,000 below the Irish rate. These figures suggest many interesting fields for further inquiry, but I cannot now devote more than a very small space to the subject. It may, however, be noted that the rates for Ireland compare favourably with those of certain other countries which have come beneath our notice in this lecture, save that in Ireland there has been no such decrease as has been elsewhere observed. It will be of interest if I furnish herewith the rates for the several forms of tuberculosis for the last 11 years (Table XXVIII.).

TABLE XXVIII.—*Showing the Death-rates in Ireland per 10,000 Persons Living for the last 11 Years.*

Year.	Tabes mesenterica.	Tuberculous meningitis.	Pulmonary tuberculosis.	Other forms of tuberculosis.
1891	2·0	1·7	21·4	2·1
1892	2·4	1·9	21·6	1·9
1893	2·1	1·8	21·4	2·1
1894	2·0	1·3	20·9	2·0
1895	2·0	2·5	21·4	2·1
1896	1·7	2·4	19·9	2·2
1897	2·2	2·5	21·5	2·3
1898	2·3	2·6	21·4	2·5
1899	2·3	2·7	21·0	2·3
1900	2·2	1·6	22·5	2·2
Average 1891-1900	2·1	2·1	21·3	2·2
1901	2·3	1·4	21·4	2·4

It is possible that the small increase noted between 1891 and 1900 may be apparent only and that such rise may be accounted for by the recognition, and therefore classification, of cases which formerly found a place under some other heading. But it is of course difficult to determine what in any given case is the result statistically of a better recognition of a disease.

I have had the pleasure of discussing this question of the increase of tuberculosis in Ireland with Mr. Stafford and he has been good enough to send me some of his preliminary reflections upon this interesting subject. He writes: "I am very interested to ascertain approximately to what extent tuberculous disease depends upon (*a*) infection; (*b*) density of population; (*c*) general insanitary conditions; (*d*) climatic influences; (*e*) economic causes. Without in any way desiring to cast a doubt upon the important influence of infection as a means of distributing the disease, I fear we may possibly lose sight of the more responsible factor which is at the bottom of the whole question—I refer to economic causes. I am inclined to look upon all the others I have mentioned merely as the agents acting upon a population which from economic causes is unable to resist the disease. Whilst I do not for one moment suggest that we should not vigorously attack these agents and do great good by so doing, if we desire to get down to the bed-rock we must deal with the question upon an economic basis. I am at present engaged in some researches somewhat on the lines of Mr. Rowntree's York experiment with a view to ascertaining how the working classes of Dublin live. I do not wish to anticipate the result of these investigations, but I believe they will show a general condition of deplorable poverty and an unduly large proportion of underfed, badly clothed, and generally ill-nourished men, women, and children, endeavouring to live under conditions which, to say the least of it, are not conducive to longevity. The result in Dublin is a very high general death rate and an exceptionally high rate of mortality from tuberculosis. Throughout this country the steady outflow of the healthiest amongst the male and female population does not tend to improve the physical condition of the race, as in addition to draining away the fittest and depriving the country of their labour we have left at home to keep up the stock what are comparatively speaking the weaklings. We have, therefore, in addition to ordinary public health administrative measures, if we wish to deal effectually with tuberculosis, to face grave economic problems. In England you have reduced your death-rates generally, and your tubercular death-rate in particular, because you have improved the condition of the people. Higher rates of wages and a better standard of living, together with better housing and improved sanitation, are the means by which the improvement has been carried out." I may add that those who are interested in this question will find a thoughtful paper in a recent number of the journal *Tuberculosis* by Mr. Robert Brown, honorary secretary of the Ulster Branch of the National Association for the Prevention of Consumption.

Some will doubtless contend that the reason why tuberculosis does not decline in Ireland is the absence of notification and other direct measures, but that this is only one of the minor factors in the problem must, I think, be apparent from the fact that the disease had been rapidly diminishing in England and in certain other countries in the entire absence of any such measures as notification, isolation, disinfection, or the limitation of promiscuous expectoration. All these measures should so far as practicable certainly be taken and the Local Government Board for Ireland has recently issued some excellent leaflets directed towards this end. I am glad, too, to see that Sir Douglas Powell has visited Cork with a view to encourage the foundation of a local branch of the National Association for the Prevention of Consumption. In the able address which Sir Douglas Powell delivered he stated, *inter alia*, that "the prevention of consumption involves a much wider issue than the circumvention of the bacillus. ..... The abolition of the Corn Duties and other Free Trade legislation and improved rates of wages have done more to diminish the death-rate from consumption than any notification law against the disease would have been likely to have effected." With this view I am much in sympathy and it seems to me that the apparent behaviour of tuberculosis in different countries, and more particularly among certain races and blends of races, suggests that the condition of the host should receive more attention than it has hitherto done. I am gratified in this connexion to find myself in agreement with such an eminent authority as Sir Dyce Duckworth when he says that "some of our younger physicians are inclined to reckon without their host."[8]

The modern treatment of tuberculosis must be regarded as being directed almost solely towards the alteration of the tissues of the host in such fashion as to render them immune to the operations of the parasite which has already obtained a hold upon the tissues. Although we find in sanatoriums the greatest care being exercised with regard to the parasite outside the body the main efforts of these institutions are directed to the destruction of the parasite inside the body. It is certainly desirable to destroy the parasite wherever it is found or likely to survive, but no one can well attach so much importance to disinfection, &c., as is to be attached to the steps taken to promote the resistance of the tissues against the bacillus.

In connexion with this subject of the control of tuberculosis there is, I venture to think, too great a tendency to assume that the discovery of the tubercle bacillus has fundamentally changed the face of affairs. But this is in no sense the case. The natural history of the disease has not become modified merely because we have unearthed one of the essential agents by which nature works her ends. The fact that the bacillus is contained in the dried sputum and in the droplets given off by the subjects of pulmonary and laryngeal tuberculosis during coughing and speaking does not enhance the degree of communicability of the disease, albeit the knowledge that light and air are prejudicial to the vitality of this bacillus should enable us the better to employ both these agents in the battle against the disease. But it is of equal importance for us to determine, if possible, precisely what are the conditions under which for many years past both in this and other countries, and in the absence of measures aimed directly at the disease, its manifestations in the human species have been diminishing in extent. It would appear not unlikely that in this falling phthisis-rate we may be reaping the result of the several measures which have been aimed directly against other diseases and against

[8] The Clinical Importance of the Personal Factor in Disease, by Sir Dyce Duckworth, M.D., LL.D. Edin. (Sonderabdruck aus der Berliner Klinischen Wochenschrift, 1902, No. 16.)

general insanitary and unwholesome conditions. Such measures have comprised the provision of more air, more light, greater cleanliness, better houses, cheaper food, and a better appreciation of the laws making for our general well-being.

Do not, therefore, let us accept without further examination, and in face of some of the facts herein set forth, the view that the reduction of the disease has been the result in the main of the discovery of the tubercle bacillus, because this is, it seems to me, a view which is not unlikely to concentrate our efforts too much upon one side of the problem. Above all, let us be cautious lest in concentrating our attention too exclusively on the bacillus we may divert the tide of energy and financial support from the continuance of those indirect measures which have apparently done so much not only for the reduction of pulmonary tuberculosis but also for the abatement of multiple other conditions detrimental to health and well-being.

A CASE OF RECURRENT VARIOLOID RASH FOLLOWING VACCINATION.

BY R. W. C. PIERCE, B.SC., M.B. LOND., D.P.H. CAMB.,
MEDICAL OFFICER TO THE GUILDFORD, GODALMING, AND WOKING JOINT HOSPITAL BOARD.

A BOY, aged 15 years, whose primary vaccination took place at seven years of age and was said to have been normal, was, in common with a large number of other boys attending the same school, revaccinated on Dec. 5th, 1901, with calf lymph of a well-known make. The lymph was obtained in batches of 24 or 48 tubes and each tube served for the vaccination of two boys. Nothing abnormal occurred except in the case of the boy in question who, like the others, was one of two vaccinated from the same tube. His vaccination was successful and nothing unusual was noticed about the arm. The boy left for his home in the north on Dec. 16th and was seen on the same day by his medical attendant to whom I am indebted for the following history. "He came home on Dec. 16th suffering from mumps [which had been prevalent at the school] and was at once sent to bed and isolated. On Dec. 24th—i.e., 19 days after vaccination—small-pox showed itself, being ushered in by febrile excitement, with increase of temperature, &c. The vesicles were numerous on the face, a fair sprinkling on the body, arms, and legs, and many on the hands and feet, including the palms and soles. The vesicles had the usual amount of areola. I do not remember if there were any in the mouth, though there were many on the lips. The eruption developed fully and followed the normal course. The general symptoms were mild. He was carefully isolated at home for six weeks. The scabs from vaccination were still on the arm when he returned home and he was steadily recovering from mumps when the small-pox showed itself."

On Feb. 22nd, 1902, the boy returned to school apparently quite well. On March 4th he was seen by the medical officer on account of conjunctival catarrh and on the 5th was placed in the school sanatorium which happened at that time to be empty. On the 6th he developed three or four vesicles of large size about the upper lip and alæ of the nose which, in connexion with his conjunctival catarrh, were taken to be herpetic. The main part of the eruption appeared on the morning of the 7th. On that evening I saw the boy for the first time and the following are the rough notes which I took then and on subsequent days :—

March 7th.—Face generally a little swollen, eyelids especially, the latter with a good deal of secretion. Lips swollen, with sordes; mouth dirty; mucous membrane inflamed and with a few vesicles on inside of lips and on palate. Temperature normal and the patient was said to have had no rise in temperature. No pain except in masticating and swallowing. A large number of hard, small, but distinctly umbilicated shining vesicles of almost uniform size and with small areolæ covering both surfaces of the hands and wrists and many (but not so numerous) on the back, inner border, and soles of the feet. There is no tendency to grouping of the vesicles. The vesicles on the palms and soles are deeply situated beneath the hard cuticle, but slightly raising surface of latter so as to give the characteristic "shotty" feel. A few vesicles on forearms but none above elbows. Site of vaccination just discernible. Several vesicles on scrotum and a few scattered over trunk and legs. One large soft bleb on upper lip and a hard vesicle or two near nostril and on forehead. Rash very irritating.

In view of the typical character and distribution of the rash (except, perhaps, that on the face) a diagnosis of modified small-pox was made. In this the medical officer to the school concurred and the diagnosis was confirmed during the next two days by two experienced medical men who were called in. The only other occupants of the sanatorium—viz., the nurse and the maid—were successfully revaccinated at once. I next saw the case on the 9th (two days later) when the condition found was as follows :—

Rash considerably changed in appearance. On palms the "shotty" feel has gone; vesicles have apparently extended laterally and contents become partly absorbed; contents rather turbid in appearance. On backs of hands the pocks though still quite circular have enlarged—some considerably—to a diameter, say, of one-quarter to three-eighths of an inch; central depression marked though small. Vesicles now flatter, slightly turbid, and not so tense. Several fleshy papules over rough skin of olecranon. March 10th.—Rash on back of hand about the same as yesterday, but in a few pocks there is a small central vesicle or pustule over central dot or umbilicus, and the surrounding part of vesicle seems more "fleshy" and devoid of contents, as if contents of vesicle had exuded laterally and uniformly into the surrounding skin. No raised vesicles on palms. Lesions on feet also enlarged, red, flattened, and one or two with tiny central vesicle or pustule. March 11th.—Lips still swollen and sore. Eruption distinctly paler and now presents following appearances. Pocks with small central depression, vesicle or scab, and enlarged circular raised pinkish-red areola. Whether this is the remains of a collapsed expanded vesicle or an inflammatory areola is not evident. One or two vesicles remain as before, only enlarged. Appearance on palms as of circular collapsed vesicles beneath epidermis with no raising of surface. March 13th.—Rash still fading. Spots on dorsum of hand getting smaller and paler. A few have scabs all over spots, no more noticed with tiny crusts over umbilicus. Palms now feel harder and uneven and raised over pocks which, however, are not dark. General appearance of rash now more like usual varioloid rash at this stage. Lips still with dark crusts. Tongue unevenly furred. April 1st.—Patient discharged. All the pocks have "peeled" out. Hands and feet rough from presence of unpeeled skin between sites of pocks.

In arriving at the diagnosis of varioloid the chief feature relied on at the time was the typical character and distribution of the rash. The onset was, no doubt, mild and the development of the rash was somewhat rapid even for modified small-pox, but these and other objections were outweighed by the character and distribution—viz., a vesicular, umbilicated rash, chiefly on both surfaces of the hands, wrists, and feet, with markedly "shotty" feel. Whilst the appearance of the rash on the second day of its appearance was considered typical of varioloid it must be confessed that the changes that had occurred by the fourth day were a little disconcerting—viz., the enlargement and flattening of the pocks. By the eighth day, however (March 13th), the scabs seemed to have regained the appearance of varioloid at the same stage. It may be that a larger number of vesicles ought to have been present on the face in order to conform to the typical distribution and it might be objected that one or two of these were large and bleb-like.

Obviously against the theory of its being modified small-pox was the absence of a severe onset and fever. There was certainly considerable constitutional disturbance as shown by the condition of the tongue, lips, &c., and the presence of anorexia. The strongest evidence against is the fact that the patient had an attack of what was taken to be small-pox two months before and what is scarcely less significant—that he was successfully revaccinated three months previously. There was no known exposure to infection on either occasion. A case of small-pox of unknown origin was, however, notified in a neighbouring town on Feb. 17th and several cases occurred at the latter end of March in the town close to which the school is situated—the origin of which also was untraced. The boy was in the habit of going by train to different places with the football team and he travelled from the north through London on Feb. 22nd—i.e., 12 days before the rash appeared in the second attack. In short, the possibility of exposure to infection could not be altogether excluded.

With regard to the question whether the two attacks were of the same nature, it may be mentioned that the patient himself as well as his mother who helped to nurse him on both occasions, were satisfied as to the similarity of the attacks which had but minor differences. From the data available it is probable that the two attacks, whatever their nature, were identical. Even allowing that the attacks were dissimilar in character, one being, e.g., varioloid and one a manifestation of vaccinia, the explanation of the attacks in view of the almost equal immunity against recurrence mutually exhibited by the two infections would be none the less difficult.

The alternative diagnosis of the case is that the rash had some connexion with the revaccination. As already mentioned the lymph used was part of a large batch obtained at the same time and no abnormal results followed its use in any other case. The maker when applied to wrote that "he

had made no alteration in the methods of preparing lymph for many years past and all tubes of a batch were absolutely alike." In the recent literature, however, I have been unable to find a case on all fours with this. It differed from the recorded cases of generalised vaccinia in that there was no recrudescence at or near the site of the original vesicles and that the rash did not appear until nearly three weeks after vaccination. Dr. T. D. Acland in his exhaustive article on vaccinia in Allbutt's "System of Medicine" states that "vaccinal eruptions are usually characterised by their temporary duration and irregular distribution and by their concurrence with vaccination; they were often attended with much irritation, considerable general disturbance, and some pyrexia." "Generalised vaccinia occurs, as a rule, comparatively early after vaccination, either one or two days before or one or two days after the pock at the seat of inoculation has arrived at maturity—that is to say, not generally before the fourth day or after the tenth. The date of its appearance may, however, vary considerably."

During the recent epidemic of small-pox many cases of vaccinal eruption have been recorded. Dr. Norman Walker[1] in 1901 published and illustrated a case of erythema multiforme closely resembling small-pox which was somewhat similar to the case under notice. It was not at first recognised as having any connexion with vaccination, but four similar cases were subsequently seen in which "the erythema appeared in from four to five weeks after the vaccination *and in all cases there was a recrudescence of activity in the vaccination marks.* In the first of these cases the lesions were so like those of small-pox that the patient was very nearly removed to hospital."

Bowen,[2] in September, 1901, published an article on six cases of Bullous Dermatitis following Vaccination and resembling Dermatitis Herpetiformis which were observed in Boston from 1895 to 1900. These appear to have been cases of mixed bullous and vesicular eruption of various sizes and *with marked grouping*, the eruption appearing from one to four weeks after vaccination and persisting with occasional intervals of freedom for months or years. Itching was usually absent. There was a tendency to grouping about the mouth, nose, ears, the backs of the hands and wrists, the ankles, and the feet.

A case of general vaccinia was published[3] last year by Freeman in which several "shotty" papules occurred about the left wrist and back of the hand on the sixth day after vaccination. On the eighth day all the papules were either vesicular or semi-pustular and were umbilicated and multilocular. *The palms were quite free as were all other parts of the body except those mentioned.* Another case was described[4] by Stewart in which three weeks after revaccination a man developed numerous large "shotty" papules on the left side of his neck which next day covered the entire neck. There were many vesicles which showed well-marked umbilication. The wrists and forearms, the back of the hands, and forehead then became covered with a profuse papular rash. All trace of the eruption had disappeared in about a week and was succeeded by a slight brawny desquamation lasting a few days.

Numerous cases of recrudescence of the vaccine vesicles within a few weeks of vaccination have been published and a few cases of "latent" vaccinia in which vesicles or scabs formed on the sites of the original and unsuccessful vaccination in one instance two and a half years later, as published by the late Dr. J. W. Washbourn,[5] and in another nine months later, reported by Dr. J. Mackenzie.[6] Of the recently published cases to which I have been able to refer, the one now under notice appears to have more closely resembled Dr. Norman Walker's case than any other. In the latter, however, the lesions, as shown by the illustration published, seem to have been of various sizes and the umbilication not very well marked. Moreover, the eruption is reported to have rapidly disappeared and there is no history of "peeling." In none of the other cases does there appear to have been a well-marked eruption on the palms with the characteristic "shotty" feel.

The nature of the attacks and the explanation of the recurrence I must leave to those more competent to form an opinion. It was, however, felt at the time of the second attack, in view of its very suspicious character and similarity to the previous attack, which had passed as small-pox without question, that the isolation of the patient was the most prudent course to pursue.

The case may have an interesting bearing on the connexion between variola and vaccinia and, assuming that the eruption was caused by the vaccination, suggests that vaccinia when introduced into a subject of high susceptibility or of a certain idiosyncrasy may partly revert to its original character. It is an interesting fact that the boy's mother when revaccinated developed a fresh vesicle on the site of the successful vaccination seven weeks later, which suggests an unusual family "receptivity."

As the possibility of exposure to the infection of small-pox can, however, not be excluded that disease must be considered, and although a severe onset with fever is usually deemed essential to the diagnosis of the disease it might be urged that the recent vaccination, whilst not sufficiently protective against an attack of small-pox, was yet powerful enough greatly to modify the symptoms.

Guildford.

[1] Scottish Medical and Surgical Journal, April, 1901.
[2] Journal of Cutaneous and Genito-Urinary Diseases, September, 1901.
[3] A Case of Generalised Vaccinia, Brit. Med. Jour., March 1st, 1902, p. 509.
[4] Ibid., June 28th, 1902, p. 1602.
[5] THE LANCET, March 8th, 1902, p. 664.
[6] THE LANCET, March 29th, 1902, p. 920.

THE ILL-HEALTH OF RICHARD WAGNER.

BY GEORGE M. GOULD, A.M., M.D.,
EDITOR OF "AMERICAN MEDICINE."

THE following quotations are from the Life of Richard Wagner by Glasenapp and Ellis, and from the volumes of Letters to Heckel, Wesendonck, and Liszt. I regret exceedingly that the reproduction here of so large a number of excerpts is necessary. I have omitted many that it seemed possible to spare and not to spoil the clinical picture. Only by careful reading can one get a clear idea of Wagner's sufferings and symptoms and be thus enabled to come to a sound diagnosis of the one malady that resulted in such various and lifelong symptoms.

Richard Wagner was born in 1813. ..... His delicate constitution required peculiar care, for he was already troubled with that irritating form of erysipelas (? erythema or eczema) which recurred at intervals throughout life. ..... Down to his sixth year he had no regular lessons; his mother wished to give him time to pick up strength and would not have him plagued with school work. ..... A pale, slim little chap in short-armed frocks, but unruly enough already—thus these traditions show the tiny Richard. (G., p. 61.)

My good uncle tried his best to put me through some educational training. ..... That I did not profit much by his instruction was, I fear, my own fault. I preferred rambling about the little country town and its environs, to learning the rules of grammar. ..... I often beguiled my uncle into reading me a story that I might avoid working. (1821 or 1822.)

By night they had to suffer for each other, as both were most excitable and fitful sleepers. ..... Cäcilie had plenty to say of her brother's sudden shouts and talking in his sleep, his laughter and tears in the night. (1822-23.)

To roam about the country was his chief delight. (Ditto.)

He ranked among the best pupils in that gymnasium from the first and passed through various divisions and classes with fair rapidity. (1822-27.)

He was plagued with his cutaneous malady even in his school days. ..... Repeated attacks of the kind. ..... An attack would be preceded by depression of spirits and irritability of temper. Conscious of his growing peevishness he would seek refuge in solitude. As soon as the attack was subdued his bright animal spirits returned. (Ditto.)

The refinement and energy of his features and the look of wanness and suffering they wore. (About 1838.)

The prose must be turned into verse and the music composed in a fortnight. ..... His nerves have been so overtaxed that he has "often sat down and wept for a quarter of an hour at a stretch." (1843.)

Constant victimage to a feeble stomach while instrumenting *Tannhäuser*. (1845.)

My whole being had been so consumed with ardour for my task that the nearer I approached its completion the more I was haunted by the notion that a sudden death would stay my hand, so that when at last I wrote its closing chord I felt as joyful as if I had escaped some mortal danger. (1845.)

Lonely walks. (1845.)

Devoted some five weeks from July 3rd to humouring his health as well as his unresting brain would let him. (1845.)

Despite the doctor's warnings against my engaging in any such occupation. (Working at *Lohengrin*, 1845.)

The doctor's orders were so emphatic against any interruption of his present cure that Wagner was obliged to abandon the outing. ..... The reason for declining was that a determination of blood to the brain, brought on by his exertions of the past season, had not yet left him. (Ditto.)

Scarcely could he himself say for certain whether his state of health were the cause of his low spirits or they the ground of his feeling so unwell; perhaps it was a little of both. (1846.)

The condition of his health just now is proved by his obtaining a three months' leave of absence "to breathe again as man and artist" in Saxon Switzerland. (1846.)

Was there any possible way out save death? (1847.)

He speaks of a sick-bed to which he has been confined for some days. The indisposition must have lasted for at least a month, for in January, 1848, he wrote that he has had a "severe attack of illness." (1847–48.)

He was busy with ideas for a big work from German mythology, but feared he might be too old, and should have undertaken it when younger. (1848, at the age of 35 years.)

The writing of the Niebelungen myth is followed by "a period of great depression." (1848.)

Winter seems to have been always attended with a certain lowering of vitality. Last year we saw it take the form of a serious illness; this year it takes that of a general depression of spirits. ..... He felt "too old" to undertake his *Siegfried*. (1848–49.)

The sole redemption lay in flight from out this life, in casting off its claims on me by self-destruction. (End of 1848.)

Gnawing torments. (1848.)

His warrant describes him as "of medium stature, brown hair, wears glasses." (1849.)

His ancient winter foes return, particularly rheumatism, which this time makes an inroad on his heart. (1849.)

He was thoroughly broken down for the present, what with rheumatism and his recent spell of literary work at high pressure. (January, 1850.)

Feeble, full of pain, unable to sleep, in search of quiet. (February, 1850.)

I'm happy to tell you I've got to the root of my illness; a violence done to my spirit had aggravated my bodily ailments to a dangerous pitch. (February, 1850.)

He means to take a journey southwards for complete recovery of his health. (March, 1850).

I've lost my health, my nerves are shattered. For the present I can live for little more than convalescence. ..... My sufferings became so insupportable that the instinct of life drove me to save myself by breaking with everyone ..... and fleeing into God-knows-what strange land. (1850.)

Ah, let us above all things get health. 1850.)

Ill, very ill as I was. (Letter to Heine, (1850.)

The last pages of this copy I have written in a mood I can intelligibly describe to no one. Candidly speaking, my only wish is to get the hateful manuscript out of the house. (Of *Opera and Drama*, early in 1851.)

Nine years afterwards Wagner refers to the "fatigue" that had come over him when writing *Opera and Drama*, a fatigue that "so sorely weighed upon his brain," that he calls it an "abnormal state of mind."

Winter is my mortal enemy. ..... My headlong mode of working always tells upon me somewhat severely in the end and I am obliged to recuperate awhile, as usual; for the next few days, accordingly, I cannot undertake the making of a copy for you. ..... To my joy I found music shaping itself to these verses most naturally and easily, altogether of itself as it were. Only, the first beginning of this labour warned me that I should completely undermine my health, if without having thoroughly attended to it, I yielded to my impulse and pursued—presumably without a break—what I had just begun. So I came to this hydropathic establishment, ... Had I gone to my *Young Siegfried* in my present state, perhaps I should have become incurable by next spring. (Autumn, 1851.)

I have become a complete water-man. This time I was ten weeks in the hydropathic establishment; only on account of the winter setting in early and with great severity have I given up the cure for the present. However, it was sufficient to give me the clearest foretaste of perfect health, a new and indescribable feeling of comfort, &c. (1851.)

This "water" interlude we may take as a not unwelcome relief in the midst of a more intricate topic. What Wagner had to undergo, however, in the vain attempt to diet his body into a condition of robust health would be past belief in these days of saner physiology, had we not his written word for it. Poor Uhlig himself, its original instigator, succumbed to the effects of a less drastic form soon afterwards. It was nearly a twelvemonth since that Uhlig began pressing his "water views" upon his leader; Wagner then replied, "I only drink water when I feel a thirst for it, yet I am far less sanguine than you." (Oct. 9th, 1850.) But the idea soon exercised a kind of fascination over him; in a fortnight he is so far on the road to conversion that he admits its value on the testimony of his younger friend's experience. By Christmas he had commenced to experiment on himself in an amateur fashion: "I, also, am doing a sort of water-cure; besides a sponge-down in the morning, cold water drunk in bed." That does not satisfy the zealot Uhlig; he recommends a "Neptune-girdle," which sounds something like a wet waistband and makes one shiver at the thought of wintry cold in Switzerland. Wagner valiantly attempts it: "I followed your advice about the Neptune-girdle at once. I hope it will suit me. On the whole I feel surprisingly better than last year." (Jan. 20th, 1851.) Two weeks later, however, he has paid the penalty of dabbling: "I'm rather unwell. By the advice of a first-rate physician, who also is an advocate of water, I have had to lay aside the Neptune-girdle for a time." And laid aside it appears to have remained till Uhlig came to Zürich and waxed eloquent about the virtues of a system that decidedly had added neither colour to his cheeks nor flesh to his bones. Uhlig, unluckily, did more; he brought with him a water-volume by a certain Rausse and well-meaningly left it behind him. On August 24th, 1851, taking a rest after the labour of fair-copying the *Communication*, Wagner relates how he has begun to turn Rausse's theories into practice during the past week: no wine, no beer, no coffee, no soup; only cold water and milk, so far as drinkables are concerned; three to four glasses of cold water in bed before rising, and any number of glasses during the day; baths at home, or in the lake at midday; half an hour's walk immediately (!) after food. No wonder he remarks that his head feels "lighter, but often somewhat dull," though he considers the latter a mere passing effect and expects "to end by getting more health than I shall know what to do with." Naturally the end of another fortnight reveals him in a wretched state, so wretched that he has been to consult the proprietor of a hydropathic quackery (September 8th), who equally naturally insists on his coming there to submit to heroic measures. September 16th Wagner goes to Albisbrunn in the commune of Hausen, on the hills to the south-west of Zürich, too ill to think of any *Siegfrieds* for the moment. On the whole, these ten weeks at Albisbrunn appear to have done him temporary good, but rather as a change of air and scene, a relaxation of mental strain, than in any other way. His humour does not forsake him, and it is here that his gigantic plan matures; but when one reads of the treatment to which he is subjected, one can feel nothing save amazement at the power of resistance innate in his constitution. This is how he describes the "cure," a fortnight ere its termination: "My daily programme now:—1 From half-past five to seven in the morning, cold pack; then cold tub (Wanne) and promenade; breakfast at eight, dry bread and milk or water [no butter allowed, as he says in another letter]. 2. Short promenade again; then a cold compress. 3. Towards 12 o'clock a wet rub-down; short promenade; another compress. Then dinner in my room to avoid disrelish [was it, or the sight of other victims, so nasty?]. An hour of idling; brisk walk for two hours—alone. 4. About 5 o'clock another wet rub-down and a little promenade. 5. Hip-bath for a quarter of an hour, about six, followed by a promenade to warm me [surely in a corridor, for it must have been pitch dark by then]. Another compress. At seven, supper: dry bread and water. 6. Whist-party till nine, followed by another compress; and about 10 o'clock to bed. This regimen I now can manage very well; perhaps I shall even increase it." "I feel myself on the highroad to recovery." (1851.)

The water-cure had "worked wonders," as he fondly imagined for a while. "I am basking in a sense of well-being such as I had never conceived. My indomitable cheerfulness, &c."

At Albisbrunn he had been condemned in the end to baths of but seven degrees above freezing-point; at home he has raised their temperature to the more civilised limit of 55° F., but mental rest is strictly enjoined on him, together with a diet which he describes as "dry bread" and milk for breakfast, dry bread and water for supper; at midday English cooking—i.e., vegetables, boiled, plain, and meat roasted on the spit. ..... The water business he still has at heart.

As for Wagner himself departure from a strict observance of cold water soon was forced upon him by the same consideration that had started it—his health. All through this winter—in fact until next autumn—we hear of one modification or another, in the endeavour to restore a shattered set of nerves, culminating in the lesson of experience passed on to Uhlig next October: "Our water-doctors, one and all, don't know enough about nerve troubles. Constitutions like mine are benefited by none but warm baths, whereas cold ones ruin them entirely. If I can only get my nerves right you'll hear another story!" The same with his teetotalism, which is wisely abandoned at last for an occasional glass of good wine. Had he but had his good Dresden doctor, Pusinelli, within arm's-length, instead of various experimenters on a bodily constitution they understood as little as his critics his artistic theories, perhaps the music for the *Nibelungen* might have actually been finished in not much over the three years originally propounded for its term. But the awl of the amateur health-cobbler was picked up first by one friend, then by another, till the letter last quoted avows: "For the present my doctor is Herwegh; he has great knowledge of physics and physiology and is more sympathetic towards me in every respect than any physician who is not at the same time a friend." (1851–1852.)

I am now living for nothing but my health. ..... I am taking a rest after the somewhat trying effects of my late cure. (December 14th, 1851.)

This winter I shall idle for my health, only sketching as thoughts occur to me. (1851.)

For the recovery of my youth, for health, nature, an unreservedly loving wife and a flock of children I would barter *all my art!* There, take it! Give me the other. (January, 1852.)

I am daily thinking of my death. (1852.)

I cannot pull round as yet and am suffering from sleeplessness, with great dejection. (Ditto.)

It is to no water establishment that Wagner goes next spring, as once proposed; his faith in that drastic regimen has been rudely shaken during the last few months. Moreover, "it is quite impossible for me to spend half a year at a hydro." ..... Not long ago he had heard of a certain Dr. Karl Lindemann, a fellow-exile, then "working remarkable cures in Paris with a marvellously mild water régime. His specialty seems to be nervous disorders." So he had written Lindemann a detailed account of his symptoms and received a regular chart of instructions to cover a protracted period; for diet chiefly game simply cooked, with a glass or two of good wine; his baths to be tepid rather than cold; the main affair—"I'm to keep quiet and write poetry." (May, 1852.)

The open air is doing me much good; every morning I roam about for two or three hours before setting to work. My working time I don't extend beyond two hours a day; it was by frequently working five to six hours that I taxed my nerves before. I have finished the entire draft of the *Walküre* now. (May, 1852.)

The nerves of my brain are so overwrought that even these few lines set me in a violent commotion. I find that I may be able to do something good, but only on condition that I keep a strict watch on myself, and especially that I interrupt my work often and completely divert my thoughts before going on again. (May, 1852.)

Yesterday I finished my *Walküre* after a month of work ..... once more I am somewhat severely knocked up: no doubt I work at too high pressure. (July 2nd, 1852.)

When I've finished a thing like the *Walküre* I always feel as if I had sweated a huge anxiety out of me, an anxiety ever increasing toward the end of the work, a kind of dread lest I should spoil something; my signature and date foot the page as though the devil were standing behind me trying to stop my last stroke. Much the same had it been with the scoring of *Tannhäuser*; the nearer I approached the completion the more I was haunted by the notion that a sudden death would stay my hand; only there is a new element here. "*Lest I should spoil something.*"

..... My previous continual anxiety about my health has also now been relieved by the conviction I have since gained of the all-healing power of water and of nature's medicine; I am in the way of becoming, and if I choose of remaining, a perfectly healthy man. If you wretched people would only get a good digestion you would find that life suddenly assumes a very different appearance from what you saw through the medium of your digestive troubles. (November, 1851. Letter to Liszt.)

We sedentary animals scarcely deserve to be called men. How many things we might enjoy if we did not always sacrifice them to that damnable "organ of sitting still." (1852.)

I am walking capitally, quite strong on my legs; only I'm not contented with my head as yet. The nerves of my brain are hideously out of order—agitation or prostration—never any time true repose. (July, 1852.)

My digestion has been in a very bad way of late. (Ditto.)

Peace I did not find. It's all up; there's no youth left in me; to live stands no longer before me; all my making and doing can now be nought but gradual decay. The nerves of my brain:—there's the trouble. (August, 1852.)

Unfortunately I can work but slowly, as everything is an uncommon tax on my brain just now. Only to-day have I finished the MS. of my address on the Performing of *Tannhäuser*. ..... It has taken much out of me and I shall have to try to rest it off. (August, 1852.)

Throughout the whole of these six months we hear one constantly repeated cry of "headache," as if the twofold strain upon the mind were wearing out its organ. At no other period does the physical suffering appear to have been at once so acute and so protracted. Is it a condition normally attendant on the birth of a colossal masterpiece? "My health is none of the best, and although my body looks fairly robust, my nervous system is in a serious state of increasing exhaustion. Through this everlasting life of phantasy without any corresponding reality, the nerves of my brain are so severely overwrought that I can only work by spurts now, and with long interruptions, if I don't mean to become a complete and chronic wreck." (Ditto.)

rushed at last so as to polish everything off, I ruined myself again. Often it's like a sharp knife cutting into the nerves of my brain. Moreover I'm feverishly tired in all my limbs; but if only my head will recover, they also will rapidly improve; on it—that laboratory of the imagination—depends everything. ..... Think of it! even this letter almost knocks me down." (August 30th.)

There cause and effect are plain as can be: the spread of *Tannhäuser*, with all the correspondence involved, has told severely on an excitable system, and the "nerves of his brain"—scientifically speaking, the region round about the optic thalami—must pay the penalty. That "sharp knife" cutting, the "feverish tiredness in the limbs," and the sense of impending evil, are the very symptoms of megrim; the attacks of which, especially if brought on by mental labour, may sometimes be prolonged for several days by successive relapses. (Sept. 5th.)

"Only two lines: I mustn't write, because I can't; that's how things stand with me"; and after barely a dozen lines, "I can write no more. Goodbye." Three days later an equally short letter, so unusual in this correspondence, ends with "That's all I'm able to squeeze out to-day. Don't take it amiss:" (September 8th.)

On the same date a notable letter to Liszt about Raff, Berlioz, and new creations begins and ends as follows: "Unluckily I can't reply to you as I should wish. The nerves of my brain are so racked again that I have had to give up all writing and reading for a while—I might almost say, all mental existence. Every letter—even the briefest—knocks me terribly up, and nothing save the greatest

FIG. 1.

RICHARD WAGNER (Lenbach).

(By the courtesy of Messrs. Dent and Co., the publishers of Chamberlain's "Richard Wagner.")

From the perpetual expression "the nerves of my brain" ("meine Gehirnnerven"), coupled with the apparent "robustness of body," I should argue [writes Ellis] that the malady was nothing deeper-seated than megrim, *alias* migraine or "sick-headache"; but anyone who has ever been a victim to that scourge, similar in many of its nervous symptoms to "influenza," will recognise the sheer impossibility of mental application when an attack is in full swing. The various forms of dieting, to which Wagner had subjected himself, would only tend to lower the general tone of the nerves, and thus exacerbate the malady. "You people mustn't talk theory any more to me just now; it sends me clean crazy. The nerves of my brain:—there's the mischief. I've terribly assaulted them: it's quite possible I may yet go mad:" (August 9th, 1852.)

And so it goes on, with variations of the same complaint (chiefly addressed to Uhlig, at least until the *Rheingold* poem is completed and the greatest load thus discharged from his mind. At first, in fact, it is impossible even to think of poetry. "I've written Heine to-day. My head is not yet clear enough for working." (August 11th.)

"Unfortunately I'm getting on very slowly (with the *Tannhäuser* Guide), as all manner of work tries my head uncommonly just now." (August 14th.)

"If my head were but better! With that cursed brochure, which I quiet (where and when?) can—or rather, could—put me really right. ..... I can write no more now! Don't be cross with me! My head is nigh bursting! I'll just hurriedly add the warmest farewell I have in my heart." Another three days later: "My head is still bad and all my nerves upset, in consequence of this eternal friction with an invisible land outside. ..... Farewell. I must stretch myself full-length on the divan, to close my eyes" (to Uhlig, September 11th). Next day we have the letter to Roeckel cited a page or two back. A week after that: "I am growing accustomed to the ruin of my nerves; one can always do a little something with them still. ..... To-day is the federal fast-day and for the last week the Föhn has been enough to make one wish one's nerves at the devil." The Föhn is a moisture-laden south wind peculiar to the valleys and lakes of Switzerland, but similar in its general effects to the sirocco so prevalent at Venice, &c. Its humidity would really seem to have eased the writer, however, much as a vapour-bath might; for not only does he indulge once more in a good streak of his pristine humour in this letter of September 19th to Uhlig, but also has important news for us: "My condition isn't a hair's breadth better yet; only I'm gradually accustoming myself to a fresh degradation of my health; I'm accommodating myself to it, and even work a little hour a day now:"

Progress with the poem was by no means break-neck at first, "a little

hour a day." Nor even every day, for a fortnight later the intimation to Liszt runs: "My nerves are still none of the best, yet I have begun to work a short hour a day at my poem again, off and on." (October 3rd.)

"I shall tell you nothing about my work; it's going slowly, but well! Fare well and healthier than me. I shall shortly go crazy!" (Oct. 5th)—a repetition of the fear expressed two months ago. Before a week is out, the poem has to be laid aside: "That I am able to write you at all to-day, is simply due to my decision to make a forced pause in my poetic work, not to fall once more into that fatal condition the most painful effects of which I have only just outrun a little. Letter-writing, however, I now am convinced once for all, severely taxes me, and you may flatter yourself if I manage even to fill this sheet of paper. If the weather were not so inveterately bad I should have started to-day on a couple of days' excursion. Already I had mapped out a tour to Glarus and Schwyz. Unfortunately, with this eternal grey dampness of the atmosphere, I shall have to abjure any pleasure-trip; simply my afternoon walk I keep up, mostly three to four hours, however hard it rains, albeit with a hang-dog sort of pleasure." (October 11th.)

By no means is he out of the wood with his nerves, for he has to send apologies through Uhlig to another correspondent next day for not answering at once. "That sort of letter always takes a deal out of me." Not a word about the poem nor in that to Liszt on the morrow. (October 13th.)

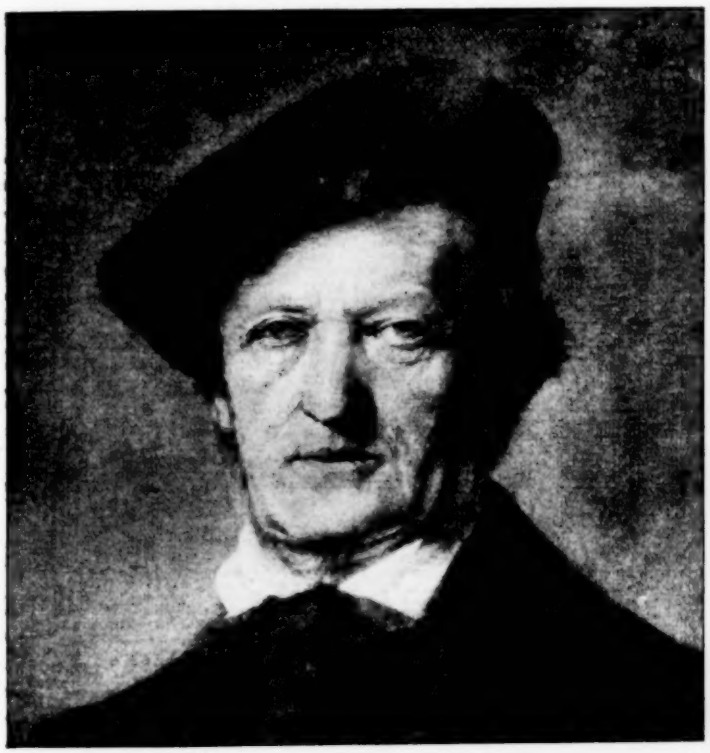
"Nothing further to-day. Used up as I am it would only be lame ..... Your old tormentor, Richard Wagner." On the 14th, just three days after the "forced pause" has been made in his poem, the migraine seems to have renewed its attack. "I wanted to work, but felt so ill that I had to pass the whole forenoon on the divan, half asleep, half awake. There 'll have to be an alteration in me."

That I have been unable to work to-day has terribly depressed me. How I should have liked a couple of days' out, but the weather is too vile—regular 2nd December.

So *Rheingold* is half-finished, apparently by October 10th. That half has taken something like four weeks to versify, or as long as the whole of *Die Walküre* last June, owing to its author's wretched health compelling him to work in snippets. And it must have been followed by another acute relapse, since not a line stands written to any of his correspondents between the 14th of October and the end of that month. November 1st we again hear of the poem at last, in terms that suggest its having been resumed about a week previously: "You'll get but half-a-dozen lines to-day, dear friend [Uhlig]. After some interruption (through being unwell) I have arrived at devoting all my power of application exclusively to the completion of *Rheingold*, and shall not stop myself to write long letters before I'm through with it. That, however, will be during the course of this week, at the end of which I therefore promise you a proper letter." November, 1852, began with a Monday; by the 3rd or 4th, then, *Das Rheingold* was finished as to its verses; for Uhlig is told on the 10th: "The middle of last week I completed my work, very much exhausted." Scarcely more than ten days can this second half of *Rheingold* have taken him, so that he must have doubled his "little hour" of late. As a matter of fact, the next letter to Uhlig will satisfy our minutest curiosity even on that point: "The postman comes at 11 o'clock every morning; I usually work from 9 o'clock until that hour, and therefore am already somewhat tired and in need of rest when my letters arrive. This places me in the alternative of either not answering at all, or doing it as briefly as possible; if I put it off, it's precisely the same next day, unless I stop my work entirely for one morning, as happens when I mean to write a longish letter. From noon to bedtime I never write another line, except in the most pressing emergency."

When the poems of *Young Siegfried* and the *Walküre* were finished, we found their author giving vent to the utmost joy; there is nothing of the kind to celebrate the consummation of the *Rheingold* poem. Partly due to the fateful lesson of the work itself, the greater share of this lack of elation must be assigned to the same cause that had impeded the poem's progress: excessive nerve fatigue. The letter that announces the event to Uhlig—and a very long letter it is, as a rest is being taken—for the most part consists of reflections on death and diet: "Let us be reasonable, dear friend, and recognise in utmost calm that every one of us bears within himself the genetic seeds of his own death, and that the only question is how to stave off that specific death as long as possible. With myself, e.g., everything tends to death through nerve-consumption. ..... So long as I still have an object in life, I wish to keep death from my throat, and for that reason adopt all feasible expedients to preserve myself. I purposely avoid all over-exertion, step out of the way of all over-excitement as much as possible, try to regulate my feeding and digestion, and aim above all at the utmost comfort, repose, agreeable impressions—so far as I can. I'm assured by many that I still may jog along awhile if I strictly observe this diet, and analogies are making it credible even to myself. ..... Simple foodstuffs are not for such as you and me: we need the complex substances that offer the utmost nourishment with the smallest demand on the power of digestion. Our rule should be to eat often, little and good, at the same time to avoid all great exertion,

FIG. 2.



RICHARD WAGNER (Lenbach, 1874).

(Reproduced from Chamberlain's "Richard Wagner" by the courtesy of Messrs. Dent and Co.)

even in bodily movements, but be careful for comfort and agreeable rest." It is the valetudinarian's gospel; but, when the invalid happens to have such an "object in life" before him as the composition of a *Ring der Nibelungen*, it becomes his absolute duty to take care of himself for sake of the world.

The same complaint of nerve-fatigue that formed a running accompaniment to the *Rheingold* poem ushers in the revision of the two *Siegfrieds*: "I must stop; my head's getting bad." (November, 1852.)

Uninterrupted work has again strongly affected me and the nerves of my brain are so overwrought that even these few lines put me in a state of violent excitement, wherefore I must ask you not to be angry if I make them very short. (1852.)

I feel that I am still capable of doing good things but only by keeping very strict diet, and especially by frequently interrupting my work and entirely diverting my thoughts before going on again. (Ditto.)

The *Valkyrie*, the poem of which I finished on July 1st, I wrote in four weeks; if I had spent eight weeks over it I should now feel better. In future I must adopt this course. (Ditto.)

Unfortunately I cannot reply to your letter as I should like to do; the nerves of my brain are once more in a state of great suffering, and for some time I ought to give up all reading and writing. I might say all mental existence. Even the shortest letter wearies me terribly. ..... I only wish to explain to you why it is that to-day I must limit my communication to stating briefly what is absolutely necessary. ..... The work has been a perfect torture to me. This eternal communication by letter and print is terrible to me. (Ditto, September, 1852.)

I am going from bad to worse every day and lead an indescribably worthless life. ..... Perhaps you will soon be rid of me. (November, 1852.)

My terrible melancholy. (Ditto, January, 1853.)

In case I should die during the work. (Ditto, February, 1853.)

How long I shall endure this terrible joylessness I cannot tell. About the middle of last month I was on the point of succumbing and thought that I should soon have to follow my poor Uhlig. I was persuaded to call in a doctor, and he, a careful, considerate, and conscientious man, takes much trouble with me. He visits me nearly every other day and I cannot but approve of his treatment. Certain it is that if I do not recover it will not be *his* fault. ..... For me there is no salvation but *death*. Would that it found me in a storm at sea, not on a sick bed! (Ditto, Feb. 11th, 1853.)

I can only live in extremes—great activity and excitement and—most perfect calm. (March 4th, 1853.)

My nights are mostly sleepless. (March, 1853.)

Whether the cure has been of any use to me the future must show, but upon the whole I am not inclined to repeat it. (Ditto, at St. Moritz, July, 1853.)

The foolish man wants to hear something from me about his book, but as soon as I bend my head a little towards *theory* the nerves of my brain begin to ache violently and I feel quite ill. (Ditto.)

Truly writing is a misery, and men of our sort should not write at all. (Ditto, August 7th, 1853.)

I am in a miserable condition and have great difficulty in persuading myself that it must go on like this and that it would not really be more moral to put an end to this disgraceful kind of life. ..... To cure my sick brain the doctor has prevailed upon me to give up taking snuff altogether; for the last six days I have not taken a single pinch, which only he can appreciate who is himself as passionate a snuff-taker as I was. Only now I begin to perceive that snuff was the solitary real-enjoyment that I had occasionally, and now I give that up too. (August, 1853.)

I am back again in Zürich, unwell, low-spirited, ready to die. ..... At Genoa I became ill, &c. (Ditto, September, 1853.)

I have many things to tell you but my head is burning. There is something wrong with me, and sometimes with lightning-like rapidity the thought flashes through me that it would be better after all if I died. (Ditto, December, 1853.)

Rheingold is done, but I also am done for. (Ditto, January, 1854.)

I went to this music with so much faith, so much joy; and with a true fury of despair I continued and have at last finished it. ...

With my terrible care my violent nervous disorder has also returned. ..... "With myself things are going from bad to worse each day; 'tis an indescribably good-for-nothing life I'm living! Of actual enjoyment of life I know absolutely nothing; to me the 'pleasure of life, of love' is purely a matter of imagination, not of experience. So my heart has had to pass into my brain and my life to become a mere artificial one; only as 'artist' can I still live; into the artist has my whole 'man' been resolved. If I take account of the wretched state now normal to me, I cannot but deem my nerves ruined; strange to say, however, these nerves do me the most wonderful service when put to it, when sufficiently fine incentives come to me; then I have a clearness of vision, a sense of pleasure in perceiving and creating, such as I never knew before. Ought I to call my nerves ruined then? I cannot. Only I see that—in the way my nature has developed—its normal state is exaltation, whereas the ordinary calm is abnormal to it."[1] (January, 1854.)

This having to make a clean copy kills me. ..... The continual writing tires me to such an extent that I feel quite ill and lose the inclination for real work. (March, 1854.)

This dislike of work (composition) is the worst feature of all. I feel as if with it eternal night were closing around me. (May, 1855.)

My frequent nervous headaches. (Letter to Wesendonck from London, 1855.)

My mental disharmony is indescribable; sometimes I stare at my paper for days together,[2] without remembrance or thought or liking for my work. (Letter to Liszt, July, 1855.)

After much trouble the first half of the *Valkyrie*, including a clean copy, has got finished. ..... For the last week indisposition has prevented me from doing anything and if this goes on I almost doubt whether I shall be able to finish this work from the sketches. (Ditto.)

I am making a tentative effort to rise from the sick bed on which I have lain again exactly three weeks ..... I have suffered from continual attacks of erysipelas of the face. (December, 1855.)

I am again, or rather still, unwell and incapable of anything (January, 1856.)

I am continually at war with my health and fear a relapse at any time.

I am waiting to see what my health will do; my doctor wants to send me to some watering-place, but to this I will not, and cannot, agree. (Ditto, during 1856.)

Again on a sick bed. To-day I am scarcely recovered and fear another relapse. ..... If I could only be well again!" ..... Another attack of erysipelas. ..... This abominable illness has brought me very low ..... The slightest disorder of my stomach immediately affects my complaint. (Ditto.)

In that terrible month of May I was able only to look at your scores with a tired eye and as through dark clouds.

My only care now is the perfect recovery of my health.

God knows I castigate my flesh by this cure ..... placed myself under Dr. Vaillant who conducts a hydropathic establishment here. ..... I feel sure of being completely cured of my ailment which, after all, was caused by nervousness. ..... During my cure I must not think of doing any work. (July, 1856.)

My catarrh has developed so that I may hope it will rid me of my usual winter illness. My health, too, is once more so bad that for ten days after I had finished the sketch for the first act of *Siegfried*. I was literally not able to write a single bar without being driven away from my work by a most alarming headache. Every morning I sit down, stare at the paper, and am glad enough when I get as far as reading Walter Scott. The fact is I have once more overtaxed myself, and how am I to recover my strength? With *Rheingold* I got on well enough but the *Valkyrie* caused me much pain. At present my nervous system resembles a pianoforte very much out of tune. (January, 1857.)

Imagine that for a week and a half I have not been able to move from my chair. This illness was just what was required to finish me up. I had just resumed my work a little after a gastric and nervous indisposition, when I was obliged to give in again. (December, 1858.)

The weather is bad; I am absolutely alone and seldom in the right mood for work. So I drag on amidst mists and moods.

My health still gives me much trouble.

My health is ruined for want of life and action.

The last act of this child of sorrow (*Tristan*) is now on the verge of "to be or not to be"; a slight pressure of some spring of the vulgar fate, at whose mercy I am, might kill this child at the very moment of its birth. Everything with me depends now upon the turning of a hand; there may be a way and there may be a stoppage, for I, my Franz, am in a bad way. ..... How miserably weak I feel as a musician. I know in my heart that I am an absolute blunderer. You ought to watch me when I am at it; now thinking "it must do after all," then going to the piano to puzzle out some wretched rubbish and giving it up in a state of idiocy. (Ditto, 1859.)

I feel as if I should break down in sight of the goal. Once at least every day I look at my book (*Tristan*) with a right good will, but my head is waste, my heart empty, and I stare at the mist and the rain clouds, which, ever since I have been here, have debarred me even from the chance of shaking up my stagnant blood by pleasant exertions ..... work alone is to help me, but who is to help me to the possibility of work? (Ditto, 1859.)

I have been severely ill these four weeks and my recovery is scarcely noticeable. I am still extremely weak. ..... I begin to perspire, and can write no more. (1859 *passim*.)

I am very slowly regaining my strength. What impedes my recovery, and indeed makes it impossible for the present, are the extraordinary exertions and excitements to which I have to expose my health, which is gradually coming back to me. ..... The proofs of *Rheingold*, which Messrs. Schott would have liked so much to have published at Christmas, have been lying on my table for seven weeks without my being able to make any progress with them. (Letter to Liszt, 1860.)

I seek rest and happiness no longer, but only breathing-space for new labours, from which *I* reap the least enjoyment. (Letters to M. v. M., 1860.)

His exertions brought on a serious illness which threatened to develop into brain fever. (Ellis, 1860.)

I am doing my best, at the doctor's orders, with all kinds of strengthening diet. (Letters to Wesendonck, 1860.)

Through my weeks of illness. (Ditto.)

A night slept through from 1 to 8 A.M. is an ideal happiness to me which I only taste as an utter rarity. (Ditto, 1861.)

..... travelled to the South of France by his doctor's advice. (Ditto, 1865.)

A doctor, whom I have consulted, recommends me Cannes. (Letter to E. W., 1864.)

I was hindered by terrible sickness from continuing my journey that day. (Ditto, 1861.)

"People often call me irascible when I am simply ill," he used to say. (Fink.)

From 1866 to 1872 at Triebschen Wagner displayed a creative activity which was simply incredible. ..... Happiness has no history. The six years at Triebschen were the happiest of his whole life. (Chamberlain.)

Truly all our politics, diplomacy, ambition, feebleness, science—unfortunately too all our modern art—all these parasitic growths upon our life have no other soil upon which they flourish than our ruined stomachs. [He seems to have thought vegetarianism "the key-stone of regeneration."] We must abstain from meat and alcoholic drinks. (Only adopted for a while.] (Letter to Liszt.)

I shall devote next summer to nothing but the possible recruiting of my health—for which, on account of the wearing and increasing pains in my abdomen, I think of taking a very protracted course of waters at Marienbad and so on. If I find myself restored to health ..... In one of my perpetually sleepless nights I have tried to gain a little ease. (Letters to Heckel, 1876, p. 99.)

In 1878 a medical examination showed amyloid degeneration of the liver, spleen, and kidneys. (Ellis.)

I am at the commencement of a course of waters, which may be very prolonged. (To Heckel, 1879, p. 118.) He had "a serious illness" in 1880. [Serious organic diseases at this time having set in.]

Only to-day do I write you, as this mournful business had to be postponed because my health is such that my dear wife was afraid even to impart to me the news of the sudden death of your father. (Ditto, 1882, p. 127.)

During the last few months there was much dyspnœa, especially after meals, but he was also busy writing several hours every morning. (Ellis.)

---

[1] Compare this with the experience of Carlyle (vide p. 70 of Biographic Clinics) who in the same way and from the same reason had to work "in a red-hot element," "with his heart's blood in a state of fevered tension," &c.

[2] Compare similar expression by Carlyle.

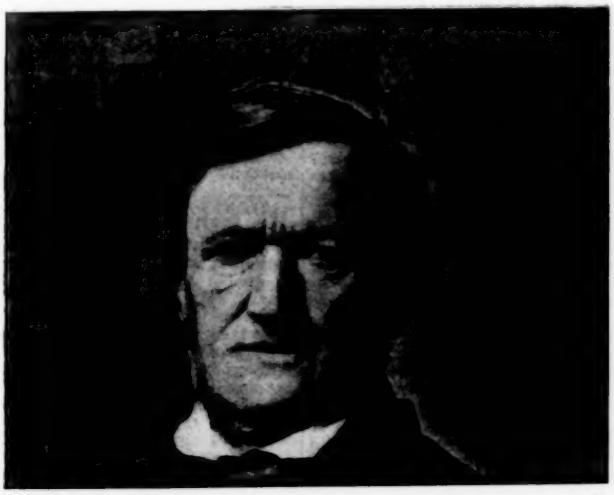
He died Feb. 13th, 1883. The necropsy showed a much dilated stomach, internal inguinal hernia, much dilated heart with fatty degeneration. Death occurred directly from rupture of the right ventricle.[3]

Headache, "sick headache," "dyspepsia," "nervousness," melancholy, insomnia, indescribable suffering—these were some of the more prominent symptoms that, in various mixtures, rendered so miserable the lives of de Quincey, Carlyle, Darwin, Huxley, Browning, Spencer, and Parkman. Some of them had some of the symptoms all of the time, some had all of them some of the time. Wagner had all of them all of the time. All of them found these symptoms exactly proportioned to the amount of reading and writing that was attempted, and when the eyes were driven to their unphysiological function the symptoms increased in intensity until life itself was threatened either by the disease or by the despair of the patient. Darwin and Wagner kept up the sad belief in the therapeutic uses of hydropathy all their lives. Carlyle and Parkman tried it, but soon perceived the folly of it. Every one of the eight learned that the only cure or relief to be found consisted in stopping reading and writing—i.e., in the non-use of musical works, and he was poor. He also suffered all his life from an intercurrent affection, erysipelas, which is a disease dependent upon denutrition. There can be nothing in medicine more certain than that eyestrain causes denutrition, and nothing more certain than that Wagner had terrible eyestrain.

It should be noted that Wagner was a "delicate boy," "a pale slim little chap," needing to "pick up strength," not profiting by instruction, liking others to read to him, "preferred rambling," "roaming about the country," an excitable and fitful sleeper, shouting and talking in his sleep, &c. But the intellectual and keen mind soon realised the sense of responsibility, and the boy picks up his school work equal to the best from his ninth to his fourteenth year, but at 25 years of age his features have "the look of wanness and suffering." All of this is an excellent description of children who suffer from eyestrain and can be duplicated from the case records of ophthalmologists many times.

At about 30 years of age an excess of writing work overtaxed his nerves so much that he "often sat down and wept for a quarter of an hour at a stretch" and he was a constant

FIG. 3.



RICHARD WAGNER.

(From Rubenstein's arrangement of the vocal score of *Tannhäuser*.) This photograph probably formed the basis of Lenbach's realistic drawing.

the eyes at near range, and in out-of-door exercise.[4] In addition to all the affections mentioned, Wagner had the mercuric artistic temperament, endured the bitterest mental anguish from the non-recognition and hate of his victim of a feeble stomach. At this time an extreme amount of work with his pen brought on the idea of sudden death which in the same circumstances reappeared many times during his life and threatened to drive him to suicide. The medical man warned him against work, fearing the "determination of blood to the head," and ordered leaves of absence for three months, &c.[5]

[3] The letters to Dr. Pusinelli, published in the *Bayreuther Blätter* in 1902, have been kindly sent to me by Mr. W. Ashton Ellis. They bear dates from 1843 to 1878. They begin with, "I have headache," and continue with complaints of bad weather and bad health; of growing old and loss of joy (aged 33 years); of increase of illness; working at composition with consequent frightful suffering; with prayers for peace, peace; moans at the uselessness of life; regrets at inability to get a good photograph; and sleeplessness. Baths and douches drive him nearly crazy. There is longing for his natural joyfulness; reiteration of physical and mental exhaustion; the thought of suicide; emphasis of his irritability and of his inability to write another line, &c. An illuminative and instructive excerpt is this: "As regards my health, I appear to those who should know as an instance of a peculiar order of men destined to a long life of work. I am very sensitive and irritable, quickly becoming feverish and perspiring, but never really ill, and recovering from indisposition so soon that I seem ridiculous." This was in 1870 when presbyopia and the release from over-use of his eyes brought happiness and peace. Thenceforth there is no complaint, in these letters, of functional disease.

[4] The alert-minded reader will find in his biographical reading constant proofs of the rôle of eyestrain which have hitherto escaped notice. For instance, of Adolf, the uncle of Richard Wagner, a man devoted to literary work, I find the following suggestive paragraph: "His bodily strength now commencing to fail with the advent of maladies brought on by the sedentariness of his occupation, Adolf resumed his favourite exercise of old, long walks, which he did not abandon until a year or so before his death. "For a year and a half or more I suffered from excruciating headaches; neither the allopathic nor the homœopathic doctors, for all their promises, helped me in the slightest. Spring came; I tore myself from my work, said good-bye to thinking, and trudged for several miles a day—and still am doing it in November whenever the weather is not wet or boggy.'" Perhaps a more striking case is that of Beethoven. At the age of 53 years, when presbyopic strain is usually at its height, I find the following note by Mr. Ellis: From April to mid-August, 1823, the period in which the Ninth Symphony was actually written, Beethoven was a martyr to (neuralgic?) pain in his eyes, for the only time in his life. Nor was that all. On August 16th he gives his nephew a catalogue of his various ailments, which are such that he fears "they will soon cut short the thread of life or wear it gradually away." A few days afterwards he writes his Archduke Rudolf from Baden, "I came here on the 13th very ill, but am better now. I had recently been attacked again with my catarrhal affection; besides that, my bowels in the most wretched condition, and then also the trouble with my eyes; in brief, my organisation was entirely shattered," (see Die Musik, 1902, pp. 1155–1160). Save for the special symptoms of the eyes one might have mistaken it for Wagner writing to Uhlig.

[5] As I write this a patient comes in bright and happy and healthy who two months ago was the absolute reverse of these things and whose life had been made as miserable as that of Wagner and from the

With each increment of added accommodation-failure things go from bad to worse every year, until at the age of 35 years Wagner feels "too old" for undertaking his greatest art-work. Depression and suffering, "broken-downness," always follow near work and especially so in winter, his "mortal enemy," when vitality was always lowered, because there was more confinement in the house and hence more reading and writing. A hundred statements grow ever clearer and clearer that writing and reading are becoming more and more impossible, produce greater and greater suffering, and that after each opera, poem, or literary work the ill-health is more tragical. He cannot even undertake "to make a copy"; music-writing is "natural and easy" and yet at the very beginning of such labour he is warned that he will undermine his health. Finally, "the nerves of his brain are so overwrought that the writing is reduced to two hours a day, instead of five or six as formerly, and the writing of a few lines of a letter sets him in violent commotion." As all ophthalmologists instruct their patients, so Wagner found by experience that he had often frequently to interrupt even his two hours a day of eye-work. Every job of composition or writing "takes much out of him" and he has "to rest it off." Headache, sleeplessness, the "working by spurts," "with long interruptions," a hundred such expressions occur, and the fear of death, the longing for it, or the resolve to seek it, is constantly re-appearing. Hundreds of such expressions as the following could be gathered: "If my head were but better"; "I shall go mad"; "the sharp knife cutting into the nerves of my brain"; "feverishly tired in all my limbs"; "even this letter almost knocks me down"; "I *mustn't* write, because I can't"; "my head is nigh bursting"; "every letter knocks me terribly up"; "the nerves of my brain are so racked that I have had to give up all writing and reading for awhile"; "I even work a *little* hour a day now"; "a short hour a day now off and on"; "I shall shortly go crazy"; "letter-writing, I am now convinced once for all, severely taxes me, and you therefore may flatter yourself if I manage to fill even this sheet of paper"; "completed my work very much exhausted"; "from noon till bedtime I never write another line"; "writing a longish letter prevents all other work that day"; "I must stop, my head's getting bad"; "even these few lines put me in a state of violent excitement"; "I ought to give up all reading and writing"; "even the shortest letter wearies me terribly"; "my work has been a perfect torture to me"; "this eternal communication by letter and print is terrible to me"; "my terrible melancholy"; "my nights are mostly sleepless"; "as soon as I bend my head toward theory the nerves of my brain begin to ache violently and I feel quite ill"; "truly writing is misery, and men of our sort should not write at all"; "the *Rheingold* is done, but I also am done for"; "this having to make a clean copy kills me"; "I begin to perspire and can write no more"; "the proofs are lying on my table for seven weeks"; "farewell, I must stretch myself full length on the divan and close my eyes." This poor patient may be excused for not recognising the simplest conclusion that the eyes were at the bottom of all this suffering. With difficulty, however, may the medical men of his day be excused, and there is no excuse for the most cruel of crimes, the brutal obstinacy which to-day makes a few ultra-conservative physicians, and even some careless ophthalmologists, deny that such symptoms in thousands of patients are due to eyestrain and are daily cured by its correction.

Even to-day men are wet-packed, as Wagner and Darwin were all their lives, for astigmatism. The silly superstition that there is any mysterious virtue in cold water has been, and is still, filling the pockets of quacks and exhausting the vitality of numberless patients. Let one with open mind read the hydropathic histories of Darwin and Wagner and not have his gorge rise with indignation. The sole good done by this nonsense, to offset the enormous, evil was that while shivering in dripping sheets the poor eyes and brain could not be doing reading and writing. Hence the little seeming good, the raised hopes, and the succeeding despair when ocular strain was again resumed.

Wagner's clearest symptom was "sick headache"; migraine, megrim, hemicrania, nervous headache or bilious headache are other names for this terrible affliction. It causes a large number of other symptoms and is itself of an infinitely varied type, according to the kind of near work required and the kind of organism of the patient. I have had thousands of patients with this disease and 99 out of every 100 were cured by spectacles. That sick headaches often disappear at the age of from 50 to 60 years is due solely to the fact that presbyopia makes eye-strain impossible. That the wrecked nervous system may sometimes go on exhibiting the symptoms after the exciting and direct cause has ceased is a truism not only of medicine but of common sense. "From 1871 onwards he had an immense amount of business to transact," writes Mr. Ellis to me, "in connexion with the building of the Bayreuth theatre, &c., but of specific complaint of headache I nowhere find a trace in the later years." All the symptoms of Wagner's functional diseases ended with the establishment of presbyopia. The sick headaches, the melancholy, the fear of death, the resolve to commit suicide, the nervousness and the insomnia ended then, not because the King of Bavaria came to the rescue of this greatest of musical geniuses, not because the wrong wife went and the right one came, not because success and popularity arrived, but because his wife acted as amanuensis, &c., and therefore he was not driven to the maddening eye-labour, and because presbyopia prevented the suffering which was the result of the least of such labour. One eye at last went out of function and this helped also to establish relief.

In Wagner's warrant he is described as "wearing glasses." Outside of that simple statement none ever seems to have seen him doing so or to have spoken of the fact. Mr. Ellis has proof that seems to him pretty good that he did not wear them. It is of no consequence whatever. Any spectacles he could get would not have neutralised his eye-strain. Were he living to-day he would in all probability not find any ophthalmologist or physician in Germany that would help him or care to help him in the one possible and effective way. There are a hundred ophthalmologists, nerve specialists, and general physicians, even in the United States, who would smile scornfully at the idea that a patient having Wagner's symptoms could be cured by the correction of his ametropia. Fortunately, there are hundreds of others who know the truth, and better, who practise it.

All through the latter part of Wagner's life he had one symptom, one of those which physicians call "objective," one that is alluded to, so far as I know, by no written word. In speaking to a great musician who knew Wagner, I mentioned this symptom, when he broke in with, "Of course! I had often observed the fact, but thought nothing of it." This symptom, which all of his physicians also ignored, comes out in most of the later photographs and the portraits, especially in those of Lenbach the realistic painter. The left eye is turned out and up. (Consult the portraits herewith reproduced.) Some American ophthalmologists call this defect "hyperexophoria." In the effort to drag the eyelid away from, and above, the pupil of this eye, it will be noticed that the forehead is arched and wrinkled in concentric curves—an appearance noticed in many such patients. In the pictures in early life this combination of heterophoria and strabismus is not shown because it did not exist. It had been overcome by strain, if it existed, and the strain had produced its effect.[6] Some of the later photographs do not show the outward and upward turning of the eye, a fact that demonstrates the temporary ability to overcome it by intense effort of "fixation" or concentration of the attention. This turning of the left eye upward and outward is, as ophthalmologists know, a result of ametropia and especially of astigmatism and anisometropia. It was a relief of eye-strain, an effect rather than the cause of it—a fact that the "graduated tenotomists," the cutters and snippers of eye muscles, forget.

A bungling newspaper headline of a review was *The Eye of Genius*—as if geniuses had a peculiar sort of eye defect. The geniuses are few, the slaves of civilisation millions. Even Wagner and Carlyle and de Quincy, as poor as they were, could stop near-range ocular work when they were compelled to do so or limit it to "a little hour" a day. Sewing-women,

same cause. In his melancholy and suffering his greatest danger had been suicide. Great nerve specialists had drugged him to stupor or had "rested" him nearly to death. Luckily he escaped the hydropathist and Christian Scientists. On this same day I also received bitter criticism from a great ophthalmic surgeon that I am an exaggerator and hobby-rider. A great rest-cure man does not even acknowledge the receipt of a complimentary copy of "Biographic Clinics." And so on.

[6] Even in the later photographs the ocular defect is not always shown, chiefly, probably because he was able by intense effort to overcome it and to secure "binocular fixation." In a letter to Dr. Pusinelli, Wagner says that the constraint and mechanical preparations for being photographed rendered it very difficult to procure a faithful likeness of his "so changeable expression." Whether "fixing" with both eyes or with but one would make a great difference in the expression. The vertical wrinkles between the eyes are also proof of eyestrain.

typewriters, clerks, many students, teachers, all poor handicraftsmen and women cannot do so. They must work eight or ten hours every day and all days with the same ocular defects as the "geniuses." The tragedies to them are therefore greater than to the geniuses. There is no greater cruelty, no greater crime against humanity than this of non-recognition and scorn of eyestrain.

This evidence presented by the portrait painter and the photographer of Wagner would not be needed by the expert ophthalmologist to prove the fact of the cause of his lifetime of awful misery. It adds the demonstration needed to convince general physicians and intelligent laymen. Many thousands of such non-medical persons who have been cured of appalling sufferings like those endured by Wagner would not need such a proof. The mere reading of the list of quotations I have gathered would make them shudder to think of their own past experience. Multitudes of others still await the finger of a divine science upon their eyes. But that touch must first come to the eyes of physicians, too many of them still blind by prejudice and tradition.

Philadelphia, U.S.A.

THE ESTIMATION OF FREE HYDROCHLORIC ACID IN THE GASTRIC CONTENTS.

BY C. E. HAM, M.B. LOND.,
AND
J. J. R. MACLEOD, M.B. ABERD.
(From the Chemical Laboratory of the Pathological Institute, London Hospital.)

IN 1889 F. A. Hoffmann[1] described a method for the estimation of uncombined hydrochloric acid in the gastric contents. This method depends on the catalytic power of the free acid in producing inversion of cane sugar, and was undertaken on the suggestion of Professor W. A. Ostwald. Hoffmann published some further papers[2] on his application of the method to gastric contents, but otherwise it does not seem to have been employed for this purpose. O. Cohnheim[3] in 1896 also used the method to determine the combining powers of proteoses and peptones for hydrochloric acid. As the other methods employed in clinical medicine for the *estimation* of the free hydrochloric acid are very inaccurate for small quantities of undiluted gastric juice and are, moreover, very difficult of application, we thought that it might be of service to repeat Hoffmann's work and to see whether the method could not be so far simplified as to make it applicable for clinical workers without at the same time affecting its accuracy. Before recording our results we had hoped to obtain records of the analyses of vomits from various gastric diseases, but owing to our having to suspend the work for some time we have thought it desirable to publish our experiences with the *method* at present, the more especially since we have found that it can be materially simplified without affecting its accuracy. We hope that it may prove useful in the hands of clinical workers.

THE PRINCIPLE OF THE METHOD.

The rapidity of the inversion of cane sugar by free acid is proportional to the amount of the free acid present. By comparing, therefore, the amount of inversion produced in a cane sugar solution by adding gastric juice to it with the amount of inversion produced in a cane sugar solution containing a known amount of free HCl—both solutions being incubated at the same temperature and for the same length of time—we can accurately determine the amount of *free* HCl in the gastric juice.[4]

To measure *accurately* the amount of free acid in the unknown solution by comparing it with a known solution all the conditions which influence such a chemical reaction must be constant in the two solutions. As this is difficult to attain, advantage is taken of Wilhelmy's law for the course of such reactions. Expressed in common logarithms this law may be expressed by the following formula: $C = \log. A - \log. (A - x)$; where C = a constant representing the relative catalytic power—i.e., the nature and quantity—of acid present; A = the amount of cane sugar originally present; and x = the amount of cane sugar which has undergone inversion in a given time.

With regard to A, the quantity of sugar contained in an optically active solution is proportional to the angle through which the plane of polarised light is rotated. Therefore the total number of degrees through which cane sugar when completely inverted changes in rotation is directly proportional to the amount of sugar which the solution contains, or, in other words, A = the total number of degrees through which change of rotation takes place on complete inversion. The value of A could therefore be found by allowing a solution of cane sugar of known dextro-rotatory power to incubate at a certain temperature in the presence of a strong acid until it was completely inverted and then noting how much laevo-rotation was produced. A would thus equal the amount of rotation of the cane-sugar solution before inversion plus the number of degrees of lævo-rotation after inversion. This process, however, would be tedious and, according to Hoffmann, A can be more easily obtained by multiplying the initial number of degrees which the cane-sugar solution is capable of rotating polarised light to the right by 0·4416 for 0° C., and for every degree Centigrade above 0° 0·00506 must be subtracted from that factor, the product of this being the amount of lævo-rotation which would be produced by complete inversion. The original dextro-rotation plus this figure gives the total rotation and represents the value of A. We have made several experiments to test the reliability of this factor and have found it to be perfectly accurate. In the same way x is proportional to the difference of the rotatory number at the beginning and end of the experiment—e.g., a certain solution had a dextro-rotatory power of 50 before inversion, and after inversion this was 45, then $x = 5$.

From the above data we are thus able to find the value of C by substituting the values of logs. of A and $A - x$ in equation:

$$C = \log. A - \log. (A - x)$$

Now let us suppose that C represents the constant for the solution containing the unknown value of HCl. Then in order to find out the amount of free HCl in the gastric juice (which is the unknown solution) we must compare it with the constant, which we will call C', of a solution of cane sugar to which a known quantity of the same acid—viz., HCl—has been added, and by incubating both solutions at the same temperature and for the same time the relation of C to C' must correspond to the *amount* of acid present. Suppose d = the amount of acid present in the known solution, then the amount of acid present in the unknown solution can be easily found by the following simple formula:

$$K = \frac{C}{C'} \cdot d \quad (K = \text{HCl in the unknown solution}).$$

The method as employed by us is as follows. The stomach contents are removed by passing a stomach tube two hours after a breakfast consisting of two eggs, two cups of coffee, two pieces of toast, and a large slice of bread and butter. (We chose this meal as it approached the normal more nearly than one of the test breakfasts usually given in clinical investigations.) The gastric contents, undiluted with water, are heated to near boiling point in order to destroy the pepsin; otherwise proteolytic digestion would proceed during the incubation which follows and the resulting proteoses and peptones combine with the free HCl, since, as Cohnheim[3] has shown, the combining powers of these is markedly stronger than is that of less hydrolysed—e.g., native—proteids. The vomit is then allowed to cool and is quickly filtered through an ash-free filter paper, the ash of ordinary paper being capable of taking up some of the

[1] Erkennung und Bestimmung der freien Salzsäure im Magensaft. Centralblatt für Klinische Medicin, 1889, No. 46.

[2] Weitere Bestimmung über Salzsäure im Magensaft. Centralblatt für Klinische Medicin, 1890, No. 29. Also Schmidt's Jahresbücher, Band 233, S. 263.

[3] Zeitschrift für Biologie, Band 33, S. 493.

[4] This action of free HCl in inverting cane sugar is due to its being a catalytic agent and it will accelerate a large number of other chemical processes in virtue of this power. Cane sugar is chosen as the body for the HCl to act on, because of the ease with which the chemical change can be measured. A solution of cane sugar rotates the plane of polarised light to the right, the amount of rotation depending on the amount of cane sugar present in it. By the process of inversion, however, lævulose and dextrose are developed and the lævulose rotates more strongly to the *left* than does the dextrose to the right, so that the original dextro rotation of the cane sugar solution gradually gets less and less as the HCl acts on it and, if left long enough, it ultimately becomes lævo-rotatory.

[5] Zeitschrift für Biologie, Band xxxiii., S. 493.

free HCl.[6] If dark in colour charcoal must not be used to decolourise the vomit, for it readily absorbs the free HCl.[7] Portions of the filtered vomit measuring five cubic centimetres each are then placed in four small Erlenmeyer's flasks (100 cubic centimetres capacity). To three of these are added 10 cubic centimetres of a saturated solution of cane sugar[8] and to one of them, also, a crystal of sodium acetate. The sodium acetate is added to absorb the free HCl, this preparation serving as a control for the detection of other inversive agencies in the vomit. All the four solutions are diluted with water to 20 cubic centimetres. The fourth flask, containing only five cubic centimetres vomit and 15 cubic centimetres water, serves as a control for any inversion of maltose which might take place. To a fifth flask are added a known quantity of $\frac{N}{100}$ HCl and 10 cubic centimetres cane-sugar solution. Its volume is likewise brought up to 20 cubic centimetres. The rotatory power of each of the solutions is then measured. For this purpose we have used a saccharimeter manufactured by Schmidt and Haensch and graduated so that 100 divisions of the scale correspond to a cane-sugar solution containing 26·048 grammes of sugar per 100 cubic centimetres and examined in a tube 200 millimetres in length (Ventzke scale). Any other scale will, however, serve equally well provided that for each determination the same scale is employed. The same applies to the tube which may be of any length provided the same tube is always employed. The scale should read to one-tenth of a degree. The solutions are then incubated at 37° C. for about 24 hours. We employ this temperature as at higher ones (as employed by Hoffmann) it is most probable that a certain amount of dissociation of HCl takes place from its combination with proteid,[9] thus rendering the results for free HCl too high. The solutions after incubation are quickly cooled so as to stop further inversion and are again examined in the saccharimeter. We have taken our saccharimetric readings always at a temperature of 15° C., at which the factor for finding the value of A is 0·3657.

To make the method of calculation clear we will give an actual determination in detail. (The stomach contents in this case were somewhat diluted with water, a glass of water having been taken just before the stomach-tube was inserted). The following solutions were prepared: (*a*) five cubic centimetres of vomit, 10 cubic centimetres of cane-sugar solution, and five cubic centimetres of water. Rotation at beginning + 34·9; at end[10] + 30·5. (a^1) Same as (*a*) (to serve as control). Rotation at beginning + 34·65; at end + 30·2. (*b*) Same with crystal of sodium acetate. Rotation at beginning + 35·0; at end + 35·0. (*c*) Five cubic centimetres $\frac{N}{100}$ HCl, 10 cubic centimetres of cane-sugar solution, and five cubic centimetres of water. Rotation at beginning + 34·9; at end + 26·0. (*d*) 10 cubic centimetres of gastric juice and 10 cubic centimetres of water. Rotation at beginning + 2·5; at end + 2·6. Since there is no inversion either in (*b*) or (*d*) we may proceed at once with the calculation.

$$C = \log. A - \log. (A - x)$$

$$A = 34·9 \times 0·3657 = 12·763 + 34·9 = 47·66$$

$$x = 34·9 - 30·5 = 4·4 \text{ and}$$

$$(A - x) = 47·66 - 4·4 = 43·26$$

The common logarithm of 47·66 = 2·6781

and of 43·26 = 2·6361

$$\therefore C = 2·6781 - 2·6361 = 0·0420$$

We must now find the value of C'.

In this case:

$$A' = 34·9 \times 0·3657 = 12·763 + 34·9 = 47·66$$

$$x' = 34·9 - 26 = 8·9 \text{ and}$$

$$(A' - x') = 47·6 - 8·9 = 38·7$$

The common logarithm of 47·66 = 2·6781

and of 38·7 = 2·5877

$$\therefore C' = 2·6781 - 2·5877 = 0·0904$$

The amount of acid in (*c*) is five cubic centimetres $\frac{N}{100}$ HCl, which equals 0·001825 gr. HCl.

∴ The amount of acid in the vomit is

$$\frac{0·001825 \times 0·0420}{0·0904} = 0·000847 \text{ gr. or } 0·01694 \text{ per cent.}$$

This calculation, although at first sight it may seem laborious, really takes very little time provided one can make use of the logarithmic tables. We have, however, found that an *approximate calculation* can be made by a very much simpler method. To use this simpler calculation it is necessary that the original rotatory power of all the solutions be as nearly as possible the same and, of course, that they be incubated for exactly the same period of time. The amount of HCl in the vomit can then be obtained by multiplying the number of degrees of inversion—i.e., x—of the unknown solution by the amount of acid which is contained in the known one and dividing the product by the amount of inversion produced in the known solution. Thus, taking the above example, inversion produced in unknown solution = 4·4; inversion produced in known solution (containing 0·001825 gr. HCl) = 8·9.

$$\therefore \frac{4·4 \times 0·001825}{8·9} = 0·00090, \text{ or } 0·0018 \text{ per cent.}$$

The following figures will show the approximate accuracy of this simpler method:—

Free HCl contained in 100 parts Vomit.

I.—By Hoffmann's method.	II.—By simple equation.
0·0518	0·052
0·058	0·056
0·096	0·090
0·050	0·040
0·066	0·061
0·017 (diluted juice).	0·018

Proofs of the accuracy and delicacy of the method.—The inversion test is a very delicate one for the detection of free HCl. In this respect it is even more delicate than the ordinarily used colour tests. The following table gives the results of one of the experiments we carried out to demonstrate this:—

Amount of HCl in 20 cubic centimetres.	Inversion test.	Günzburg's test.	Di-methyl amido-azo-benzol.
0·000365 gr.	Measurable rotation in 24 hours at 60° C.	Negative.	Negative.
0·00073 gr.	Well-marked rotation.	Very faint.	Faint.

The results depicted in this experiment we have obtained in a large number of controls. We see that the presence of about 1 part of HCl in 30,000 parts of water can be easily detected by the inversion test. At this dilution Günzburg's test gives only the very faintest result, the di-methyl-amido-azo-benzol test being, however, fairly distinct.

The HCl combined with proteid has no inversive action. As a quantitative test it is also very reliable as the following experiments show. Five small flasks were taken and there were put into (*a*) 10 cubic centimetres of cane sugar + 5 cubic centimetres of gastric juice and made up to 21 cubic centimetres by adding H_2O; (*b*) 10 cubic centimetres of cane sugar + 5

---

[6] Thus 20 cubic centimetres $\frac{N}{100}$ HCl required for neutralisation 16·8 cubic centimetres of a weak solution of NaOH. When an ordinary filter paper (of 11 centimetres diameter) was placed in the 20 cubic centimetres of acid, only 15·3 cubic centimetres of alkali were necessary.

[7] Thus even in the cold we have found that the purest charcoal obtainable—viz., that prepared from cane sugar—is capable of taking up over 70 per cent. of the free acid and that this acid cannot be removed from the charcoal even by boiling with water. The only way by which it could be displaced was by placing the charcoal in a wide combustion tube and passing superheated steam over it, this latter being then condensed in a condenser.

[8] By using strong cane-sugar solutions the value of x for the same strength of acid is greater than when weaker solutions are employed and the experimental error is correspondingly less.

[9] Another advantage of employing this temperatures is that practically no evaporation takes place. If higher temperature be employed it is necessary to make the solution up to the original volume before examining it at this stage.

[10] That is after incubation for one night at 37° C.

cubic centimetres of gastric juice + 6 cubic centimetres $\frac{N}{100}$ HCl, representing 0·00219 gr. HCl = 21 cubic centimetres; (*c*) 10 cubic centimetres of cane sugar + 5 cubic centimetres of gastric juice + crystal of sodium acetate + 6 cubic centimetres H_2O; (*d*) 10 cubic centimetres of cane sugar + 8 cubic centimetres $\frac{N}{100}$ HCl, representing 0·00292 gr. HCl, + 3 cubic centimetres H_2O; and (*e*) 10 cubic centimetres of gastric juice + 11 cubic centimetres H_2O and a small quantity of $\frac{N}{100}$ HCl added (this latter flask was used in order to correct for maltose if necessary). In flask (*a*) the amount of free HCl as calculated by the formula is 0·00259 gr.; this amount represents the quantity in five cubic centimetres of gastric juice (the amount used in the experiment); therefore, one cubic centimetre of gastric juice will contain 0·000518 gr. HCl, the percentage being 0·0518. In flask (*b*) the amount of HCl was found to be 0·004655 gr.; this consists of the HCl in gastric juice, plus a known quantity which had been added—viz., 0·00219 gr. Therefore, the amount of acid in the five cubic centimetres of gastric juice is equivalent to 0·004655 −0·00219 = 0·002465 gr. Therefore, one cubic centimetre of gastric juice contains 0·000493 gr. of HCl, giving a percentage of 0·0493 as against 0·0518, making a difference of 0·0025 per cent. of HCl in the vomit in the two flasks. In a second experiment the results are even better. In flask (*a*) the amount of HCl in one cubic centimetre of gastric juice was calculated to be 0·00055 gr., while in flask (*b*), which contained as before a known quantity of HCl as well as the unknown quantity in the gastric juice, the amount of HCl present in one cubic centimetre of gastric juice was 0·00054 gr., the difference being 0·001 per cent. in the two estimations. A third control was done with liquor pepticus (Benger). The percentage of HCl in this was found to be 0·2282. In flask (*b*) it was calculated to be 0·212, giving a difference of 0·016 per cent. in the two cases.

The percentage of free HCl in the gastric contents two hours after a mixed diet we have found to be, on an average, about 0·06. The following table gives the results of some determinations by the method detailed above:—

C. E. H.	*J. J. R. M.*
0·066	0·059
0·056	0·055
0·053	0·048
0·049	0·060

It will be seen that the percentage is a remarkably constant one, at least in the two cases investigated.

In conclusion we may state that the method is a comparatively simple one and that it can easily be carried out with one of the simple polariscopes used for the estimation of sugar in urine.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

LARGE PIECE OF GLASS IMBEDDED IN THE ORBIT FOR 20 YEARS WITHOUT CAUSING SYMPTOMS; REMOVAL.

BY J. HOGGAN EWART, M.D. EDIN.

ON July 4th, 1903, a married woman consulted me about a small sinus situated about two centimetres above the inner canthus of her left eye. She stated that 20 years ago a clock fell on her head the glass of which broke and made a deep cut across, and to the outer side of, her left eyebrow. This was sewn up and with the exception of a slight pricking about eight years ago which quickly passed off and a puckering of the skin over the inner side of the upper eyelid there were no symptoms until about three weeks ago when the skin broke and there was a slight watery discharge. On examining this small opening (only half a centimetre in diameter) with a probe I found that a large triangular piece of glass was deeply imbedded transversely above the eye, the apex, lying on the nasal bones, being easily felt under the skin on the right side of the nose, and the base on the left orbital plate and tarsus. I removed it the next day.

It is remarkable that this large, thick piece of glass—the measurements of which were: length, 3 centimetres; breadth, 1 centimetre; thickness, 1·75 millimetres—should have remained in this position for 20 years without causing symptoms or damaging the eyeball, upon which it might easily have encroached, the edges being quite sharp. It was much cracked. I was therefore glad that after a trial with a pair of forceps I removed it digitally or it would most certainly have splintered and caused great trouble. My thanks are due to Mr. M. G. Yunge-Bateman who kindly administered the anæsthetic.

Folkestone.

FRACTURED CLAVICLE WITH OSSIFIC UNION IN UTERO.

BY E. SYDNEY HAWTHORNE, F.R.C.S., L.R.C.P. IREL.

IN THE LANCET of May 9th last, p. 1310, you published under the heading "Looking Back" a case of the above extracted from one of your former issues dated May, 1825. As it may prove of interest to your readers I ask the courtesy of your pages to publish a case which has recently come under my observation.

On April 1st the patient, a married woman, was delivered of a full-term child without any trouble and on examining the infant I observed a small tumour of the size of a walnut situated at the centre of the right clavicle. This proved to be hard, dense, and immoveable and gave apparently no pain on pressure. No crepitus was felt on moving the arm and shoulder blade and there was no limitation of movement. The structures surrounding it were freely moveable and the skin over it was perfectly normal in appearance. I diagnosed a fractured clavicle united with callus surrounding the broken ends of the bone. I have frequently examined the infant during the past three months. The tumour has become less in size owing to absorption of the excessive callus and it is now represented by a small hillock on the upper surface with a corresponding depression beneath due to the ends of the bones being tilted upwards and in almost perfect apposition—a condition usually found in greenstick fractures of the young. There was no history of injury to the mother during her period of pregnancy.

Mudgee, New South Wales.

NOTE ON A CASE OF BERI-BERI.

BY DR. JULIO M. ESCOVAR,
ARMY MEDICAL SERVICE OF THE REPUBLIC OF COLOMBIA; GENERAL SURGEON TO THE PANAMA ARMY.

THE patient was a man, aged 32 years, who had been in Chiriqui Gaol since Sept. 14th and was admitted into Santo Tomas Hospital on Oct. 29th, 1902. There was no family history of importance. His general health had always been good except for several attacks of ague that had left an enlarged spleen. There was no history of syphilis, lead poisoning, or arsenical poisoning. He took but little alcohol. The urine was acid and free from sugar and albumin. The patient said that the trouble began on Sept. 28th with shortness of breath on exertion and a general sense of feebleness which was more accentuated in the legs. A week later he could not stand or walk and had lost tactile sensibility in the soles of the feet. He had full control of his rectum and bladder; his appetite was poor; and his pulse was 90, regular, and compressible. The heart sounds were energetic and accompanied with a soft diastolic murmur which was to be heard in the right second intercostal space and was audible also in the neck. The temperature ranged between 36·8° and 37·2° C. Thermic and tactile sensibility was lost from the tips of the toes up to the knees and the plantar and patellar reflexes were abolished but not the cremasteric. Having no suitable apparatus at hand the neuro-muscular reactions to electricity were not explored. Hypodermic injections of sulphate of strychnia daily were ordered, starting with two milligrammes and adding two milligrammes every day to the previous dose until 16 milligrammes were reached on Nov. 6th. The patient became

worse slowly, diarrhœa came on, and he died from exhaustion on the 14th.

At the post-mortem examination, 24 hours after death, there was some general rigor mortis, the lips and cheeks were intensely blue, and there was drop-foot, especially on the left side. The abdomen contained some four ounces of straw-coloured fluid. There were many old fibrous adhesions between the parietal peritoneum and the spleen and the liver, the latter having the appearance found in those who die from mitral stenosis. The weight of the spleen, which was of hard consistence, was 420 grammes. The kidneys and the remainder of the abdominal contents were normal. Nothing abnormal was found in the lungs and pleural cavities. There were three ounces of serous fluid in the pericardial sac; there were no pericardial adhesions. The heart had four milky patches distributed on the external aspect of the ventricles; its weight was 412 grammes. The thickness of the walls of the left ventricle was 32 millimetres; there were many adherent old white clots in both ventricles; but the endocardium, orifices, and valves were healthy. An incision was made from the gluteal ridge to the calf in the median posterior line of the left thigh, exposing the great sciatic nerve; the subcutaneous fat was scanty, the muscles had the ordinary appearance, and there was no congestion, discolouration, or change appreciable to the naked eye either in the nerve or in its sheath. The head and spinal canal were not opened.

Herewith I inclose for microscopical examination a specimen taken with every aseptic precaution from the left sciatic nerve near its bifurcation in the popliteal space.

Panama.

*** The specimen in question was examined microscopically by a member of our staff but did not exhibit any pathognomonic change.—ED. L.

A Mirror
OF
HOSPITAL PRACTICE,
BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum allorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv., Proœmium.

EAST LONDON HOSPITAL FOR CHILDREN.

FIVE CASES OF PURULENT PNEUMOCOCCIC ARTHRITIS IN CHILDREN.

(Under the care of Mr. L. A. DUNN, Mr. H. BETHAM ROBINSON, and Dr. H. MORLEY FLETCHER.)

FOR the notes of the cases we are indebted to Mr. Leonard S. Dudgeon, late pathologist to the hospital (now superintendent of the clinical laboratory at St. Thomas's Hospital), and Dr. W. P. S. Branson, pathologist to the hospital.

CASE 1.—A girl, aged five months, was admitted under the care of Mr. L. A. Dunn on Jan. 31st, 1903. Two weeks before admission she had "bronchitis," from which she had nearly recovered when, on Jan. 27th, she had a fit, at which time it was first observed that the left knee was flexed, swollen, and painful. The child was well-nourished and free from organic disease apart from the affection of the knee. The latter was swollen, red, hot, shiny, and freely fluctuating. The general condition was good, the fever was only moderate (from 100° to 102° F.), and the general appearance was not that of grave illness. The joint was opened by lateral incisions and a quantity of pus was evacuated. With the operation the fever fell and for five days the child seemed to be mending. Then followed a recurrence of the fever with marked cervical rigidity, on the strength of which the right tympanic membrane, which appeared to be inflamed, was punctured, but without discharge of pus or relief from the symptoms, and two days of persistent vomiting ended in death on the fourteenth day from the commencement of the illness.

Necropsy.—The post-mortem examination was made on Feb. 14th. The body was somewhat wasted; the left knee-joint was well drained, containing only a small quantity of thick reddish-yellow odourless pus, and there was no local disease of bone or bone marrow appreciable by the naked eye. There was no other evidence of disease except for a small quantity of thick yellow pus in the right middle ear.

Bacteriological examination.—At the operation upon the knee cultures were made from the pus upon various media and resulted in the growth of a delicate organism conforming in all cultural characteristics and morphology to the pneumococcus of Fraenkel. At the necropsy a culture was taken in a sterile glass syringe from the blood in the right ventricle and resulted in the growth of an organism in all respects identical with that found during life in the pus from the affected joint. Unfortunately no culture was made from the pus found in the middle ear.

CASE 2.—A boy, aged six years, was admitted under the care of Mr. H. Betham Robinson on March 23rd, 1903. The patient had been ill for three weeks with earache and subsequent otorrhœa, when on March 17th he complained of pain and swelling in the left knee-joint, followed on the next day by similar affections of the right hip and wrist. There was no history of rigor, convulsion, or any other symptom of note. The patient on admission appeared to be very ill and lay curled up in bed with all his joints flexed. He had a troublesome dry cough and was slightly delirious, though his fever was moderate. Nothing abnormal was to be discovered in the lungs or heart. The left knee-joint was in all respects similar to that of the patient in Case 1—swollen, red, hot, shiny, and fluctuating—while the right hip and wrist appeared to be in a less advanced state of inflammation, and this in the latter seemed not to involve the joint but to lie superficial to it. The urine was normal. The knee-joint was opened and a quantity of thin pus and flakes of fibrin were evacuated and a similar result attended the opening of the hip-joint. The swelling over the wrist was incised without result. Little benefit resulted from the operation, though the wounds progressed favourably. Fever continued high at night with morning remissions and with gradual loss of strength, but without specific complications; the child died from asthenia 20 days after the operation. No post-mortem examination was allowed. Pure cultures of the pneumococcus were obtained from the pus found in the joints.

CASE 3.—An infant, aged six months, was admitted under the care of Dr. H. Morley Fletcher on April 10th, 1903, with a history of tenderness and swelling of the right leg for eight days. On admission the child was found to be well nourished but acutely ill. The temperature was 103° F. The contents of the chest seemed to be normal and signs of disease were confined to the right leg which was diffusely swollen from the hip downward, semi-flexed at the knee, and very tender. Four days later the patient was much worse, the temperature was seldom below 102°, the right leg was more swollen, and fluctuation was to be obtained above the patella. In addition there was a small abscess over the proximal interphalangeal joint of the third finger of the right hand. Lateral incisions into the knee-joint set free a small quantity of deeply blood-stained pus, while yellow pus was obtained from the phalangeal arthritis. There was no relief from the operation and the patient died within 12 hours. No post-mortem examination could be obtained.

Bacteriological examination.—Films prepared from the pus in the joints and stained with the ordinary aniline dyes showed cocci, diplococci, and streptococci, while cultures yielded a pure growth of the pneumococcus.

CASE 4.—A boy, aged 14 months, was admitted under the care of Mr. Betham Robinson on April 21st, 1903. Three weeks before admission the patient underwent an attack which was pronounced to be pneumonia, since which he had been losing flesh without definite symptoms until one week before admission when the right elbow was observed to be swollen and tender. The child was pale and thin and suffered from slight fever. The right elbow-joint was swollen, red, very tender, and fluctuating, and there was some swelling in the anterior triangle of the neck on the left side; otherwise, as in the other cases, there was no sign of organic disease. The elbow-joint was opened on the day of admission and about an ounce of pale yellow, odourless pus was evacuated. On the next day, as there was difficulty in swallowing, the swelling in the neck was incised from the outside and a small quantity of thick yellow pus escaped. The patient improved, but on May 7th the right knee-joint was noticed to be swollen and fluctuating. Exploration with a needle yielded a negative result, but on incision of the joint about an ounce of clear fluid was evacuated and the joint cavity was found to be lined by a gelatinous false membrane which was easily separable by the finger. The patient now made

an uninterrupted recovery and was sent to the convalescent home on June 4th.

Bacteriological examination.—It will be noticed that there were three separate incisions, each yielding a fluid of different character; moderately thick pus from the elbow, pus still thicker from the neck, and from the knee a clear fluid and a fibrinous membrane. Culture tubes were inoculated with pus from the elbow and yielded on all the media employed a small growth in 24 hours. One cubic centimetre of a 24-hour broth culture injected into the peritoneal cavity of a white mouse led to its death within 18 hours and films prepared from the heart's blood, spleen, and kidneys showed numbers of cocci, diplococci, and short chains in every specimen. A pure culture of the pneumococcus was also obtained from the heart's blood and the spleen. A coccus was cultivated from the abscess in the neck which in morphology and cultural characteristics resembled the staphylococcus albus, but it is to be regretted that a careful investigation of this organism was not undertaken. No organisms could be seen in the film preparations from the membrane lining the knee-joint and all cultures were sterile.

CASE 5.—An infant, aged one year and nine months, was admitted under the care of Mr. Dunn on May 28th, 1903. Five weeks before admission the patient had measles; three weeks later flexion of the right hip-joint was observed with tenderness on movement. The patient was an ill-nourished and weakly child. The right hip-joint was flexed and surrounded on all sides by a large fluctuating swelling to which an impulse was transmitted on coughing. The temperature was found to be 100°F. Elsewhere there was no sign of disease. On incising the abscess a large quantity of greenish-yellow odourless pus was evacuated from a cavity extending widely in all directions, notably downwards where it crossed the ischium and entered the ischio-rectal fossa. The hip-joint was disorganised and the head of the femur was dislocated upon the dorsum ilii.[1] In spite of the extent of the lesion the temperature fell after the operation and the child rapidly improved. On bacteriological examination the pus from the hip-joint yielded a pure culture of the pneumococcus.

Remarks by Mr. DUDGEON and Dr. BRANSON.—The cases above recorded offer several points of interest. In the first place they are, with one exception, cases of purulent arthritis in *infants*—in itself an uncommon condition; moreover, they stand out in sharp contrast with such cases as are due to the staphylococcus aureus, streptococcus, &c. It has been our experience, and that of our predecessors, that the pneumococcus practically monopolises the etiology of infective arthritis during infancy and about up to the end of the first hemi-decade and the type of the disease is peculiar. Except in the severest cases the constitutional symptoms do not keep pace with the extent of the local lesion and a baby whose knee-joint is distended with pus may sleep and eat well, a condition inconceivable in the case of staphylococcal or streptococcal infections of so large a joint. The fever is usually irregular and moderate, while the appetite survives and prevents extreme emaciation.

The character of the local lesion is, in a typical case, almost distinctive, the most striking feature being the nearly complete absence of circumarticular inflammation, though the pain, tenderness, and distension of the joint all point to an acute inflammatory process. In none of the above cases was there any brawny swelling or œdema worth mentioning. The disease is accompanied in most cases by an intense pallor which is best compared to that occurring in long-standing cases of empyema in children, which condition, it will be remembered, is almost invariably pneumococcal in origin.

The variations in the character of the pus from such joints as these are of interest and probably of prognostic value. In cases of moderate severity it is fairly thick, yellow, but with a distinct shade of green, odourless, and very prone to fibrin-formation and deposit of lymph, similar in fact, in every way to the common type of pus from the empyemata in children. On either side of this type there occur varieties which appear to measure the intensity of the process at work. Thus in Case 3 the pus was deeply blood-stained; in Case 2 it was thin and to the naked eye resembled turbid serum, though microscopically loaded with pus cells. The patients in both of these cases died, thereby confirming our belief in the ominous import of thin pus in pneumococcal infections, a belief derived from observation of acute empyemata, in which if the pus is of the thin turbid order above described death commonly results. On the other side of the type may be placed such conditions as that present in the knee-joint of Case 4, where a gelatinous membrane, consisting of fibrin and pus cells, inclosed a clear fluid. Whatever the antecedents of this condition it was at all events very chronic and comparatively harmless.

The prognosis, if based upon these meagre statistics, would seem to be very grave, for three patients out of the five died. No doubt the average mortality is not so high. Herrick, however, obtained a mortality of 65 per cent. in the 52 cases which he collected from the literature. One patient of the five had been ill for a week with swollen joints before admission and it is reasonable to believe that his chances were prejudiced by this long delay. But with all allowances it cannot be said that our experience tallies with that of those who consider the prognosis in cases of pneumococcal arthritis to be favourable.

Treatment was carried out on accepted principles and the affected joints were drained from side to side. It was generally found possible to remove the drainage-tube on the third day, after which the discharge gradually abated. Even in the worst cases the treatment of the local condition was fairly satisfactory and free from complication. In the one case where the patient had been discharged cured the mobility of the elbow-joint, from which thick pus was obtained, was considerably diminished; the knee-joint, which contained the clear fluid and membrane above described, has escaped abnormal limitation of movement.

Bacteriology.—In all these cases a complete bacteriological examination was made and in one case additional confirmation was gained by animal inoculation. The organism stained by Gram's method and with the various aniline dyes. A growth was obtained on a variety of media—viz., agar, bouillon, blood-agar, glycerine-agar, and blood-serum. In those cases in which it was tried no growth was obtained on gelatin (melting-point about 24° C.). We regret that the medium advised by His for the differentiation of the pneumococcus from the streptococcus was not employed. The organism was found to be capsulated in the pus obtained from the infected joints and in two cases from the blood-agar tubes. The serum reaction was not attempted for the diagnosis of any of these cases.

Pathology.—It is a curious fact that there was no case of inflammation of any of the serous sacs or important viscera in any of our patients, although pneumococcal inflammation was proceeding actively in certain joint cavities; and when we consider how important a part the pneumococcus plays in the acute diseases of children the freedom of these five cases from all the common lesions of this organism must be admitted to be remarkable. There is, however, this to be remembered, that three of these five patients died, one of whom yielded the pneumococcus in pure culture from the heart's blood at the necropsy. It is fair to say, therefore, that this child died from pneumococcic septicæmia. The other two fatal cases lacked a post-mortem investigation, but we personally believe that the pneumococcus might have been cultivated from the heart blood in these cases also and that death occurred in them, as in the other, from septicæmia, in which event the absence of organic disease in the viscera is more intelligible.

The above belief is based upon investigations into the real cause of death in cases where necropsy reveals no more, perhaps, than an infinitesimal area of broncho-pneumonia. In a dozen cases of this kind the pneumococcus was obtained from the heart's blood, generally in pure culture, and similar results attended the examination of other varieties of pneumococcic infection—e.g., lobar pneumonia, severe broncho-pneumonia, meningitis, empyema, &c. Even in patients dying with other lesions in themselves fatal, such as generalised tuberculosis, we have cultivated this organism from the heart's blood and are compelled to come to the conclusion that the pneumococcus plays an even more important part in the acute infections of children than is usually said and that a generalised infection of the blood by this organism is a fairly common event. Whether this septicæmic condition attends fatal cases only is a question that awaits further investigations into the bacteriology of the blood during life.

As regards the primary focus of infection, it will be

[1] Great destruction of the joint appears to be most common in chronic cases, but in an acute case described by Fernet and Lorraine the left sterno-clavicular joint was completely destroyed, the surrounding muscles were disintegrated and marked with streaks of pus, while the articular cartilages were disorganised, only rough denuded bone remaining.

recalled that one patient had suffered from an attack of "bronchitis" previously to the joint affection, a second an attack of otorrhœa, and a third one of "pneumonia." Assuming that these diagnoses were correct we have a possibly exciting cause for three out of the five cases. Netter, quoted by Muir and Ritchie, states that out of 46 cases of pneumococcic infection of children, otitis media was the primary lesion in 29, broncho-pneumonia in 12, meningitis in two, pneumonia in one, pericarditis in one, and pleurisy in one. No case of primary arthritis enters his list.

The important and variable part played by the pneumococcus in children can be well illustrated by the following facts. During the last six months 15 cases of pleuritic effusion have supplied fluid for bacteriological examination at the East London Hospital. In 11 the pneumococcus was isolated in pure culture, in two the culture was sterile, and two gave a growth of staphylococcus albus. The pneumococcus was also obtained during that period from two cases of suppurative pericarditis, four cases of meningitis, and two of peritonitis. In many of these cases it is impossible to be certain of the primary lesion but probability inclines to the middle ear.

Cave, in an excellent monograph on this subject, found in a total of 31 cases an antecedent pneumonia as the cause in 23, a result widely differing from our own; but his cases were almost entirely confined to adults, while ours were all in young children. In two cases quoted by him in which the disease affected children a pneumonia followed the arthritis.

There was no suggestion of trauma in the cases under notice, a fact that eliminates a possible explanation, for it has long been known that injury to a joint, followed by inoculation elsewhere with the staphylococcus aureus, will in animals determine a suppurative arthritis of the injured joint. The same thing is true of the pneumococcus; indeed, arthritis has been produced by section of the sciatic nerve and subsequent inoculation with the pneumococcus, the inflammation affecting the joints of the injured limb. Cave found direct evidence of previous damage to the affected joint in ten of his 31 cases, but no doubt the greater age of the patients in his series increased their liability to injuries of the joint by comparison with the youthful subjects of this paper.

Our best thanks are due to Mr. Dunn, Dr. Morley Fletcher, and Mr. Betham Robinson for permission to make use of the above cases.

Bibliography.—Fernet and Lorraine (quoted by Herrick): Note sur un cas d'Infection Pneumococcique à Manifestations Articulaires et Méningées, Gazette des Hôpitaux, April 2nd, 1896. James B. Herrick: Pneumococcic Arthritis, American Journal of the Medical Sciences, July, 1902, vol. cxxiv., p. 32. Muir and Ritchie: Manual of Bacteriology, 1902, p. 197. E. J. Cave: Pneumococcic Arthritis, THE LANCET, Jan. 12th, 1901, p. 82. Leron: Les Arthrites à Pneumocoques, Paris, 1899. (This is the most valuable work on the subject.) Pfister: Jahrbuch für Kinderheilkunde, April 5th, 1902.

Reviews and Notices of Books.

Tropical Diseases: A Manual of the Diseases of Warm Climates. By Sir PATRICK MANSON, K.C.M.G., M.D., LL.D. Aberd. 8vo, pp. 756. With 130 Illustrations and two Coloured Plates. New and revised edition. London: Cassell and Co., Limited. 1903. Price 10*s.* 6*d.*

SINCE the first edition of this work appeared in 1898 several reprints and two new editions have followed in quick succession. The necessity for these frequent issues is owing to the popularity of Sir Patrick Manson's book and to the rapid changes which have taken place during the past five years in tropical pathology. The text is arranged under seven sections apportioned into 45 chapters.

Section I. deals with Fevers, among which malaria occupies the most prominent place. There are several noticeable changes in this part of the work. The term "plasmodium" is definitely set aside as being a scientifically inaccurate nomenclature for the malaria hæmamœba; the anatomy of the mosquito is more minutely described and illustrated; the methods of staining malarial blood have been improved of late although they are all modifications of the original Romanowsky's method; and the hæmocytozoa of animals according to Laveran's grouping are shortly considered. The most noticeable feature in this section is the general tone of confidence adopted concerning the mosquito theory of malaria which, but a few years ago, was put forward in the first edition of this book as an unproved suggestion. The theory so well enunciated by Sir Patrick Manson in 1894 has now passed from mere conjecture and has become an accomplished fact. Under Section I. is included Trypanosomiasis, which as a disease affecting man has only been definitely known since September, 1902, when Forde published his case of anomalous fever, mentioning that he had found a parasite in the blood which was recognised by Everett Dutton as a trypanosoma. Spotted fever, a disease met with in the districts of Montana and Idaho, U.S.A., is also included amongst the fevers for the first time. In Chapter XX. are discussed "unclassed fevers of the tropics"; their number and variety offer a fruitful field for investigation and no doubt in the near future several of these ill-understood diseases will be further studied and classified.

Section II. is devoted to Beri-beri, Epidemic Dropsy, and Sleeping Sickness, these ailments being grouped together under the title of "General Diseases of Undetermined Nature." The last named has, within the past 12 months, assumed an absorbing interest, for sleeping sickness has spread beyond the Congo Basin, where it was originally met with, and reached Central Africa and even threatens the inhabitants of the Nile Valley. Originally considered to be associated with the presence of filaria perstans in the blood, an assumption now practically set aside, its etiology was subsequently referred to the presence of a certain diplococcus; but showing how rapidly facts accumulate in this sphere of inquiry, even since the appearance of this manual evidence of a confirmatory character has been obtained, through the investigations of Castellani and Bruce, that the disease is associated with, or caused by, a trypanosome met with in the cerebro-spinal fluid.

Of the remaining sections No. III. is devoted to Abdominal Diseases, No. IV. to Infective Granulomatous Disease, No. V. to Animal Parasites, No. VI. to Diseases of the Skin, and No. VII. to Local Diseases of Uncertain Nature.

Perhaps the most complete and important piece of new work related is the discovery of the relationship of the mosquito to yellow fever. The United States Army Commission investigated the mosquito theory of yellow fever in a wholly convincing manner, with the result that not only the means by which yellow fever is carried has been settled, but, as has been proved in Havana, the extermination of the stegomyia mosquitoes has resulted in the disappearance of the disease from that city. The possibility of the introduction of yellow fever into Asia by way of the Central American Canal is referred to and the means of its prevention are described. Another theory which now becomes a scientific fact is that the filarial embryo finds its way into the proboscis of the mosquito, almost conclusively proving what was long ago conjectured by Sir Patrick Manson that the parasite is conveyed to warm-blooded animals whilst it feeds upon them. Many other new facts deserve notice, but the above will suffice to show the necessity for a new edition of "Tropical Diseases." Tropical pathology is advancing so rapidly that from week to week, certainly from month to month, new conclusions are arrived at and fresh information is brought to light. It will be seen from our review of the report of Dr. Lacerda's researches and from the letter from our New York Correspondent which appears at p. 345 that the theory that the mosquito is the only means of transmitting yellow fever is not universally accepted, though without doubt it is the most important agent.

Throughout every page of the book we recognise the handiwork of a master of his subject. No disease is

touched upon that does not afford proof that it has been carefully considered and the chaff separated from the wheat. Not only are we indebted to Sir Patrick Manson for much that is new in the book but the work of others is duly recognised and appreciated, the whole forming a compendium of tropical diseases of pre-eminent excellence. The plates and illustrations are good and of a serviceable character. The practitioner in the tropics will welcome the new edition of this manual, a book which he recognises as essential for him to have and one on the general accuracy of which he can thoroughly rely.

Recherches sur la Cause et la Prophylaxie de la Fièvre Jaune, faites au Laboratoire de Biologie du Musée National de Rio de Janeiro. (Researches upon the Cause and Prophylaxis of Yellow Fever, made at the Biological Laboratory, National Museum, Rio de Janeiro.) By Dr. J. B. LACERDA. Rio de Janeiro: Imprenza Naiconal. 1902. Pp. 68 + 11 Plates.

THIS work by Dr. Lacerda is divided into two parts—viz., the first, in which are detailed the observations and experiments demonstrating the cause of yellow fever to be a *ferment;* and the second, containing an account of the different means of access of the disease to the pathogenic germ. Dr. Lacerda remarks that although so much has been done, especially by Sanarelli, to elucidate the cause and pathogeny of this malady, yet that there are a number of facts not yet explained. He holds that this disease as regards its causation differs from the type common to the infectious diseases in general and that it has a distinct individuality so as to merit a special location amongst the zymotic affections. From his researches he deduces the following facts: that the cause of yellow fever is a ferment present in the blood, the vomit, the liver, the stomach, and the kidneys of the patient, the liver being the organ more especially affected; that this ferment reproduces itself in the digestive canal of the culex, where it is found to possess the same attributes as it has in the blood and organs of those attacked with the disease; that the ferment is acid and that consequently the most rational treatment is by alkalies. The success of this treatment, first proposed by Sternberg, was shown, amongst others, by Guardia and Martinez at Havana, where the mortality following it was only 13·59 per cent. as compared with a mortality of 43·5 per cent in cases not so treated.

Regarding the means of entrance into the human organism the author holds that the poisonous agent is infective either by subcutaneous inoculation or through the stomach. The stings of the culex that has fed on a yellow fever patient are chiefly the agency by which the disease is spread in the former case. But Dr. Lacerda does not consider this to be the sole method of the spread of the disease, for he has caused rabbits to succumb with the symptoms and post-mortem lesions of yellow fever after introducing into their gastric cavity the cultivated ferment of the disease. How the pathogenic entity reaches the stomach is not definitely determined; it is certainly not by the drinking water, for according to Dr. Lacerda not a single valid fact can be brought forward in its favour in this respect. He considers that flies, after settling on the excreta of yellow fever patients, alight on articles of food and so infect them. One of his arguments against the culex being the sole agent in the transmission of the disease is this. The normal life of the mosquito does not exceed two months. How, then, according to this theory, can yellow fever, after being absent for six months in Rio de Janeiro, reappear at the end of this period? Again, in Louisiana in 1850 an epidemic of yellow fever was not modified by a temperature sufficiently low to produce ice, yet the mosquitoes there were all quiescent during this period of low temperature.

Dr. Lacerda concludes his work with the description of the preparation of his "vaccine" and announces his belief that by means of its repeated inoculation strangers newly arrived in Brazil will be rendered immune for six months against an attack of yellow fever and will acquire an absolute immunity after a sojourn of two or three years in the yellow fever zone, provided that they are reinoculated each year during the epidemic season. The "vaccine" is prepared from the toxic materials in the liver of rabbits which have succumbed to the infection of the "hyaline cellules," the name given by Dr. Lacerda to the ferment of yellow fever. At the same time protection against the bite of the mosquito must be carried out.

Traitement de l'Avortement. (The Treatment of Abortion.) By Dr. MOISE MISRACHI. With a preface by Dr. J. A. DOLÉRIS. Second edition. Paris: R. de Rudeval. 1902. Pp. 366. Price 6 francs.

THIS book, of which a first edition appeared in 1894, has been written by the author mainly with a view to show the advantages to be derived from the treatment of cases of complicated or incomplete abortion by early curettage. The principle of such early intervention is confirmed by Professor Doléris who contributes an introduction. The frequency with which the author has had occasion to interfere will be seen from the fact that in a total of 248 cases of abortion he has found it necessary to empty the uterus no less than 187 times—viz, in 75·4 per cent. of his cases. As he points out, however, practising as he does in a country district amongst ignorant people, he is often only called in when some complication is present. In only 120 cases has he seen the patients from the very commencement and been able to carry out the whole treatment of the case. Of these 120 cases, in 59 he has been obliged to interfere, or in 49·1 per cent. In two cases the patient was suffering from septicæmia, while in 39 cases the indication for interference was hæmorrhage. All the 59 patients recovered. The results are certainly very good, but it must be remembered that many cases in this plan of treatment are operated upon which under ordinary conditions would be left alone and would no doubt do quite well. The book contains a large number of illustrative cases and the subject is discussed very fully although perhaps hardly in a very convincing manner. We are not in agreement with the author in his fervid recommendation of the curette, and while we quite admit that when the proper indications are present the uterus should be emptied, yet we would much prefer the finger for this purpose to the curette, and it would require a great deal more evidence than Dr. Misrachi has brought forward to convert us to the contrary opinion. Under the treatment of inevitable abortion the writer recommends very strongly the use of antipyrin and of viburnum prunifolium as uterine sedatives. The work is interesting but discursive, presenting only one view of a very important question.

Eye Symptoms as Aids in Diagnosis. BY EDWARD MAGENNIS, M.D. R.U.I., D.P.H. R.C.S. Irel., late Clinical Assistant at the Royal London Ophthalmic Hospital. London: Simpkin, Marshall and Co., Limited. Bristol: John Wright and Co. 1903. 12mo, pp. 108. Price 2*s.* net

ALTHOUGH Dr. Magennis has evidently taken much pains with this little book we doubt whether the class of men for whom it is written will derive much advantage from its perusal, for if they can see the details of the fundus of the eye that are here described, such, for example, as obliteration of the outline of the papilla, radiating striæ fading off gradually into the surrounding tissue, swollen and tortuous veins, and small hæmorrhages and exudations in the neighbourhood of the disc, they must have been dull and incurious indeed if they had never inquired what diseases these

conditions connoted. It is almost an unavoidable defect of booklets like this that with great condensation obscurity creeps in. Thus all that is included under Lagophthalmus is that it is synonymous with "hare's eye," that it is an inability to close the eyelids, and that "it is present in Basedow's or Graves's disease, where it is often so aggravated as to cause blindness"; how or why is not given. The author remarks that the cornea, the lens, and the vitreous are of no diagnostic value, a sweeping statement that is open to discussion and we think to refutation. In commenting on the treatment of iritis Dr. Magennis mentions atropine, lead, leeches, protection of the eyes from light, and constitutional treatment. We should have omitted the lead and should have mentioned opium. The relation of the pupil reflex to lesions of the nervous system is well given; a woodcut showing the course of the nerve fibres might have been advantageously introduced. A few errors have crept into the letterpress. "Punctum lacrymalis" should be "punctum lacrymale," an error that occurs in the text and is repeated in the index. "Purkinge" should be "Purkinje" or "Purkinye." The book might be increased in size with advantage.

LIBRARY TABLE.

Flora of Thanet: A Catalogue of the Plants Indigenous to the Island, with a Few Rare Aliens. By G. M. PITTOCK, M.B. Lond., and Friends. Margate: R. Robinson and Co. Pp. 14. 1903.—We have received from Dr. Pittock his catalogue of the Flora of Thanet, founded upon the "Flora Thanetensis" published by Mr. John Flower some 50 years ago. Mr. Flower's list numbered 454 plants and included the algæ. The present list of 565 plants is exclusive of the algæ. Every plant recorded in Mr. Flower's work has been verified by Dr. Pittock and his fellow workers or has been rejected as not now to be found, so that their revised list, if not exhaustive, may be considered as nearly so. The catalogue is a simple list of the classical names of the flowers, notes of the localities where they were discovered having been prudently omitted lest ruthless collectors should descend upon the rare varieties and exterminate them, as is their disgusting wont. The life of the medical man in the country is nowadays so onerous and so ill-paid that few general practitioners have leisure to turn aside and to seek diversion from the daily routine by excursions into some scientific pursuit. This is to be regretted, for medical men are by their accurate training fitted to examine and to report upon the flora and fauna of the localities in which they reside. Systematic collation of local work done by members of our profession would have inestimable scientific and historic value, and we wish that we could chronicle more efforts on the part of medical men in the direction of field natural history.

Practical Handbook of the Diseases of the Eye. By D. CHALMERS WATSON, M.B., F.R.C.P. Edin., Ophthalmic Physician, Marshall-street Dispensary, Edinburgh. Second edition, with nine Coloured Plates and 31 Illustrations in the text. Edinburgh and London: William Green and Sons. 1903. Small 8vo, pp. 276.—This small book is one of those of which so many have recently appeared intended for students who are attending eye wards as clerks or dressers and for practitioners who have not had the opportunity of studying ophthalmology in their hospital career and who desire to acquire some information upon that subject. Such works are useful in familiarising the reader with the names and the more prominent features of the chief forms of disease of the eye, the names of the principal drugs in common use, and some of the indications for their administration. The division of the text into short paragraphs with separate headings may possibly assist some learners, but it has the disadvantage of rendering the description of any disease such as iritis exceedingly uninteresting, reducing it, in fact, to a mere syllabus. The woodcuts in the text are well executed, but the chromo-lithographs, though recognisable as representations of certain conditions, admit of considerable improvement.

JOURNALS AND MAGAZINES.

Caledonian Medical Journal.—The July number contains an account of the twenty-third annual meeting of the Caledonian Medical Society, held at King's College, London, on July 11th. The society now consists of 214 ordinary and 14 honorary members; at this meeting a lady member was for the first time elected. Three of the essays sent in competition for the Stewart Celtic prize on "Old Highland Therapy" were so nearly equal in merit that £5 were added to Dr. Stewart's donation of £10 and the prize was divided between these three competitors. Their names are Mrs. K. Whyte Grant, New Zealand; Mrs. Robert Moodie, Edinburgh; and Mr. Henry Whyte, Glasgow. The essays will be published in the next three numbers of the journal. At the annual dinner, which was held on July 10th at the Trocadéro Restaurant, the toast of "Caledonia" was proposed by the Bishop of Exeter and Highland airs were played by the boy-pipers of the Royal Caledonian Asylum. The last part of the proceedings was a river excursion to Windsor and Eton. The presidential address, delivered at the meeting by Dr. H. Cameron Gillies of London, is printed in the journal under the heading of "The Caledonian Idea." It is mainly an interesting historical inquiry into the etymology of the word Caledonia which, he says, first occurs in the writings of Lucan about A.D. 63; the displacement of the original inhabitants by the "Scottish invasion" from Ireland is also discussed.

Dublin Journal of Medical Science.—The original articles in the July number are:—On two cases of Lymphatism, by Dr. George Peacocke; on the Late Cholera Epidemic in Egypt, by Lieutenant-Colonel G. F. A. Smythe, R.A.M.C.; and Notes on a Year's Asylum Work, by Dr. W. R. Dawson.

Mercy and Truth.—The principal article in the July number is a description of a visit to Dera Ismail Khan in the North-west of India by Mr. Arthur Neve, F.R.C.S. Edin.

Analytical Records
FROM
THE LANCET LABORATORY.

"TABLOID" QUININE SALICYLATE.

(BURROUGHS, WELLCOME, AND CO., SNOW-HILL-BUILDINGS, LONDON, E.C.)

WE have previously had occasion to examine tabloids of quinine salicylate containing three grains of the salt. We have since received specimens containing one grain of quinine salicylate which enables smaller doses to be given at more frequent intervals. The drug has been employed in influenza, neuralgia, and diarrhœa. The salicylic acid from which the salt is prepared is stated to be physiologically pure.

STRONG BEEF TEA.

(GEORGE MASON AND CO., LIMITED, WALHAM GREEN, LONDON, S.W.)

This "strong beef tea" is contained in tins of a capacity of one and a half pints. It is a "whole" beef "tea," since it contains not only the extractives of the meat but the muscular fibre also in a finely comminuted state. According to our analysis the amount of meat fibre is 3·74 per cent. or equal to one ounce of dried fibre in one and a half pints. The extractives and albuminous matters in solution amounted to 12·95 per cent., of which 2·37 per cent. is due to mineral salts. The "tea" has a pleasant flavour of beef and is very

well suited, as is claimed, "for emergency or general use at nursing institutions." It is both appetising and nourishing and its concentrated condition is an advantage.

MALTOVA.

(MALTOVA, LIMITED, 11, NEW STATION-STREET, LEEDS.)

We have already expressed a favourable opinion in regard to this preparation which consists of a combination of an active malt extract with raw egg. Maltova has recently been improved in an important dietetic direction by enriching it with those lime salts which are necessary for the mineral nutrition of the body. Moreover, maltova is now contained in a wide-mouthed bottle which is straight in shape and is provided with a screw cap. In this way the removal of the sticky contents may be effected in a cleaner and more convenient manner than before. Judging from the amounts respectively of fat and proteid which we obtained on analysis the proportion of egg is not very high, the sugar amounting to at least, and probably more than, 70·0 per cent.

(1) CHELTINE NUTRIENT MILK CHOCOLATE; AND (2) CHELTINE MALTED MILK CHOCOLATE.

(CHELTINE FOODS, LIMITED, CHELTINE WORKS, CHELTENHAM.)

(1) To the nutrient milk chocolate, which is excellent as regards flavour, a proportion of soluble protoid of milk has been added and accordingly our analysis shows a high percentage of nitrogen. The complete analysis was as follows: moisture, 0·15 per cent.; mineral matter, 0·16 per cent.; fat, 27·72 per cent.; proteid, 29·98 per cent.; and sugar and other cocoa constituents, 41·99 per cent. The chocolate is an economical and nutritious sweetmeat. (2) The malted chocolate milk contains, in addition to full cream milk and cocoa extract, a proportion of cheltine soluble maltose food.[1] Our analysis gave the following results: moisture, 0·24 per cent.; mineral matter, 0·26 per cent.; fat, 35·52 per cent.; proteid, 12·50 per cent.; and maltose and cocoa extractives, 51·48 per cent. The proportion of moisture is again very low. The preparation has an agreeable malty flavour and is a very palatable nutrient compound.

COGNAC BRANDY (THREE-STAR).

(HENNESSY AND CO. AGENCY: TWISS AND BROWNINGS, 47, MARK-LANE, LONDON, E.C.)

The analysis of this brandy gives results entirely in agreement with those yielded by genuine grape spirit distilled and matured in the celebrated Cognac district. The figures were as follows: alcohol, by weight 40·80 per cent., by volume 48·21 per cent., equal to proof spirit 84·49 per cent.; extractives, 0·70 per cent. containing sugar, 0·20 per cent. In regard to secondary products the following were the results, given in grammes per hectolitre of absolute alcohol present: acidity reckoned as acetic acid, 74·52; aldehydes, 16·56; furfural, 1·65; ethers reckoned as ethyl acetate, 109·29; and higher alcohols, 124·20. The relation of these constituents to each other is exactly that which is found in genuine brandy. Thus the ethers occur in very nearly the same amount as do the higher alcohols, while the furfural is less than half of that which is commonly found in pot-still whisky. The brandy is very satisfactory to the palate; it is smooth and soft, possessing that peculiar *finesse* characteristic of the brandy from the celebrated district of Cognac. For medicinal purposes it is important to employ a spirit of this undoubtedly genuine type.

GRANDE CHAMPAGNE (GRANDE IDEAL).

(LOUYS BULTEAUX PÈRE, EPERNAY. LONDON AGENCY: 29, LUDGATE-HILL, E.C.)

We have examined samples of the 1893 and 1895 vintages of this brand. As will be seen, there are differences of composition between the two wines which are of dietetic importance. The analysis of the 1893 wine was as follows: alcohol, by weight 11·23 per cent., by volume 13·90 per cent., equal to proof spirit 24·36 per cent.; extractives, 2·75 per cent.; mineral matter, 0·07 per cent.; volatile acid calculated as acetic acid, 0·072 per cent.; fixed acid calculated as tartaric acid, 0·39 per cent.; sugar, 1·34 per cent.; volatile ethers calculated as ethyl acetate, 0·202 gramme per litre; and fixed ethers calculated as ethyl tartrate, 0·45 gramme per litre. The wine is described as "brut," a description which is quite in accordance with the small amount of sugar shown in the above analysis. The wine has excellent bouquet and taste and the samples which we examined were in fine, sound condition. The analysis of the 1895 wine was as follows: alcohol, by weight 11·69 per cent., by volume 14·46 per cent., equal to proof spirit 25·34 per cent.; volatile acidity reckoned as acetic acid, 0·12 per cent.; fixed acidity reckoned as tartaric acid, 0·45 per cent.; extractives, 1·69 per cent.; mineral matter, 0·10 per cent.; sugar, 0·21 per cent.; volatile ethers reckoned as ethyl acetate, 0·343 gramme per litre; and fixed ethers reckoned as ethyl tartrate, 0·968 gramme per litre. This wine is also described as "brut" and, as will be seen from the analysis, it is for all practical purposes free from sugar. On this account it is suitable for those who must avoid an excess of sugar. The wine is quite dry to the taste, the flavour is delicate, but in this regard shows less "character" than does the previous specimen.

(1) IMPERIAL WHISKY; AND (2) O.V.H. WHISKY.

(W. GREER AND CO., LIMITED, GLASGOW.)

(1) The Imperial whisky gave the following results on analysis: extractives, 0·110 per cent.; and alcohol, by weight 38·83 per cent., by volume 46·08 per cent., equal to proof spirit 80·75 per cent. In regard to secondary products the following were the results expressed in grammes per hectolitre of absolute alcohol present: acidity reckoned as acetic acid, 39·06; aldehydes, 14·32; furfural, 3·49; ethers reckoned as ethyl acetate, 106·76; and higher alcohols, 108·50. These results indicate a blended malt spirit and accordingly the taste is delicately malty. Further, the spirit has been thoroughly matured in sherry casks which probably accounts for the higher amount of ethers than is usual in whisky. The spirit is evidently of good quality and is an excellent and palatable blend. (2) The O.V.H. whisky gave the following results on analysis: extractives, 0·12 per cent.; and alcohol, by weight 39·55 per cent., by volume 46·86 per cent., equal to proof spirit 82·12 per cent. The secondary products were estimated to be as follows expressed in grammes per hectolitre of absolute alcohol present: acidity reckoned as acetic acid, 15·56; aldehydes, 10·65; furfural, 2·55; ethers reckoned as ethyl acetate, 72·03; and higher alcohols, 85·20. These results indicate again a "blend." The whisky is satisfactorily smooth to the palate, its flavour being delicately malty. It is a spirit of good quality and is well matured.

UNSWEETENED GIN (FIVE-STAR).

(BOORD AND SON, 115-121, TOOLEY-STREET, LONDON, S.E.)

Genuine gin is a highly rectified spirit and therefore contains a very small proportion of those secondary products of alcoholic fermentation which characterise whisky, brandy, and rum. The following are the results in regard to secondary products yielded by the sample of gin above described expressed in grammes per hectolitre of absolute alcohol present: acidity reckoned as acetic acid, *nil*; aldehydes, 1·78; furfural, *nil*; ethers expressed as ethyl acetate, 37·28; and higher alcohols, 44·60. Thus the total secondary products amount to only 83·66 grammes per hectolitre of absolute alcohol present. Further results of analysis were as follows: extractives, 0·04 per cent.; mineral matter, 0·01 per cent.; sugar, *nil*; alcohol, by weight 37·67 per cent., by volume 34·79 per cent., equal to proof spirit 78·50 per cent. The spirit is thus correctly

[1] Vide THE LANCET, June 20th, 1903, 1748.

described as dry. It is a pure spirit, delicately flavoured, and entirely free from sugar.

ANGOSTURA BITTERS (SEIGERT'S).

(KUHNER, HENDERSON, AND CO., 115, CANNON-STREET, LONDON, E.C.)

The preparation of "Angostura bitters" is well known as a tonic and stomachic and even febrifuge, acting much in the same way as cascarilla, calumba, cinchona, and other bitter barks. Bitters act favourably on digestion by inducing the flow of saliva and of the gastric juice, while their effect on the gastric nerves is to produce a sensation of hunger. They are thus useful for a distinctly medical purpose but their continual use is strongly to be discountenanced. The preparation under examination is a clear red alcoholic extract of cusparia bark. According to our analysis it contained 5·96 per cent. of extractives. The bitter principles are chiefly glucosides, bodies which yield glucose by hydrolysis with dilute acids. In regard to alcoholic strength the following were the results: alcohol, by weight 44·18 per cent., by volume 51·82 per cent., equal to proof spirit 90·81 per cent. Angostura bitters have been the subject of adulteration, but we believe this particular specimen to be free from any suspicion on this head.

"ARABELLA" NATURAL MINERAL WATER.

(ARABELLA, LIMITED, 2A, HAY-HILL, BERKELEY-SQUARE, LONDON, W.)

This is a sulphated water of the Hungarian type drawn from springs near Belgrade which in view of its high degree of mineralisation is not so disagreeable to the taste as might be expected. According to our analysis the following is its composition expressed in grammes per litre: sodium sulphate, 21·08; magnesium sulphate, 15·66; calcium sulphate, 0·50; sodium chloride, 1·40; and sodium carbonate, 1·017; total mineral salts, 39·657. The water has a distinctly alkaline reaction. It is an effective though mild saline purgative.

"VISANUS" DISINFECTANT LIQUID SOAP.

(THE VISANUS COMPANY, 2 AND 4, CARRICK-STREET, GLASGOW.)

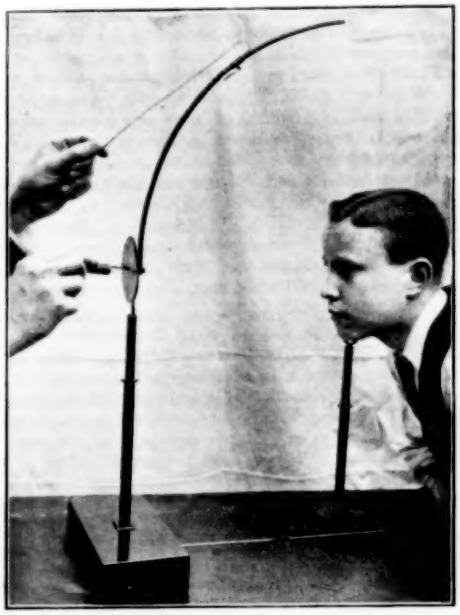
This liquid soap is primarily intended for hospital use, but it is obviously available for other purposes in which the application of an antiseptic and a cleansing agent is desirable. We have examined the preparation and find it to contain an efficient proportion of active germicide. It is perfectly miscible with water and is useful for the disinfection and cleansing of clothes and linen. When properly used it has no injurious action or discolouring effects.

New Inventions.

A NEW PORTABLE PERIMETER.

THIS instrument consists of the following parts: 1. Two uprights, to one of which a jointed aluminium arc can be attached, while the other is provided with a rest to support the chin. The uprights are brass tubes which slide within one another and by means of a screw adjustment they can be raised to any convenient height. That which supports the arc fits into a socket on the lid of the box, thus affording complete stability during examination of the visual field. 2. The arc consists of three pieces of aluminium tubing which fit firmly together and form a quadrant of a circle of radius 33 centimetres. The first piece of tubing which springs from the upright is firmly joined to this and cannot be removed. The other two pieces can be readily detached and fit into curved grooves in the lid of the box when the instrument is not in use. 3. The carrier which supports the test object consists of two superposed discs, the anterior of which has an aperture of five millimetres square at its inner margin. The posterior disc can be rotated behind this and the colours white, blue, red, and green placed in succession behind the opening. The carrier itself is moved round the arc by means of a steel wire 10 inches in length in the observer's hand, the movement being very easy and necessitating but little manipulation. 4. A thin metal disc three and a half inches in diameter which can be screwed to the back part of the upright supporting the arc. A point springs from the centre of this disc and there are four clips at its margins to affix the chart. The observer rotates the disc and with it the arc and chart while taking the visual field of the patient.

FIG. 1.



Showing use of perimeter with chin rest.

FIG. 2.

Showing use of perimeter without chin rest.

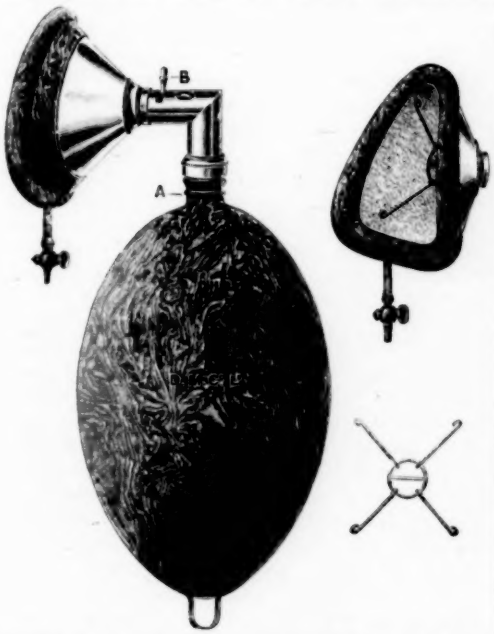
The visual field may be taken with this instrument either with the chin rest or without it. The distance of the patient's

eye from the fixation point of the perimeter is measured by means of a steel rod 33 centimetres in length which can be fixed to a hole in the front of the box (if the chin-rest is used) (Fig. 1) or into a hole in the upright which supports the arc one and a half inches below the fixation point of the perimeter if the instrument is used without the chin-rest. The distal end of the rod in the latter case impinges on the patient's cheek while the upright is in the hand of the observer, as shown in the illustration (Fig. 2). With a little practice sufficient steadiness is obtained to take the fixation field in cases of paresis of the ocular muscles, and to measure the angle of a squint without using the chin-rest. It is very useful for examining the visual field in patients confined to bed. The different parts of the instrument fit into a wooden box ten inches long, four and a half inches wide, and two inches in depth. The weight is little and it can readily be carried in a small hand-bag with many other articles. The charts are three and a quarter inches in diameter and are gummed at their upper margins for ready insertion into a notebook. This instrument has been made under my direction by Messrs. Ferrier, 56, Beresford-street, Walworth-road, London, S.E. The workmanship is excellent. The charts are supplied by Messrs. Adlard, Bartholomew-close. The cost is moderate.

G. T. BROOKSBANK JAMES, F.R.C.S. Eng.,
Assistant Ophthalmic Surgeon, Westminster Hospital;
Assistant Surgeon, Royal Eye Hospital,
Southwark.

THE "IDEAL" INHALER FOR THE ADMINISTRATION OF SOMNOFORM AND ALLIED ANÆSTHETICS.

THIS is the name that has been given by the makers to an apparatus which I have devised and have been using almost daily for over three months. The accompanying illustrations so clearly denote the construction and method that very little further explanation is necessary. Briefly, the chief advantages of this inhaler are as follows:—1. It is simple

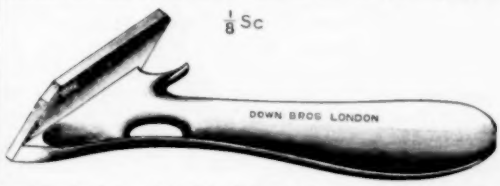


in construction, unbreakable, and cannot get out of order. 2. The truncated-shaped lint cone being kept in position by a four-armed spring can immediately be removed and replaced at a cost of practically *nil*. 3. By leaving the air valve B open when applying the face-piece the patient is able, however small the quantity of air in the supplemental bag, to take a deep inspiration, which becomes saturated with somnoform in passing through the mask. On closing the valve B after the first inhalation the bag becomes automatically filled, hence obviating the need of removing the face-piece until full narcosis has been obtained. This hastens the induction of anæsthesia and at the same time prevents any waste of the anæsthetic, about half a drachm (2·5 cubic centimetres) of which will usually produce a narcosis of from one to three minutes' duration, according to the temperament of the patient, though more in the form of further doses can be given as required. 4. The supplemental bag is an improvement on the ordinary variety in that it is reversible; hence it is quite a simple matter to keep it thoroughly aseptic, and being made of a new kind of rubber it can be sterilised in boiling water. To release the bag the rubber ring A encircling the neck should be pushed upwards on to the metal collar provided for that purpose. 5. With this inhaler somnoform very advantageously takes the place of nitrous oxide as a preliminary anæsthetic to presenting ether, chloroform &c. Where ether is selected Clover's ether container should be previously attached. The inhaler can be obtained from the Dental Manufacturing Company, Lexington-street, London, W., who regard so highly the reversible supplemental bag that they are seriously thinking of making gas bags on the same principle.

Reading. VERNON KNOWLES, L.D.S. R.C.S. Eng.

A MODIFICATION OF ROUGHTON'S SPLINT FOR POTT'S FRACTURE.

THE accompanying illustration shows a modification that I made in Roughton's splint nearly a year ago and which I now venture to introduce for the treatment of Pott's fracture into the ankle-joint. As in Roughton's pattern, the splint is made of wood and it can be seen to be shaped for the outer side of the leg and foot, the oval fenestra being opposite the external malleolus, but instead of the leg- and foot-pieces being at right angles they together form an acute angle four-fifths of a right angle, and the sole-piece also is fixed at an acute angle with the leg as well as with the foot-piece, the angle in each case being four-fifths of a right angle. In the larger-sized splints the angle of flexion of the foot-piece should be nine-tenths of a right angle. In treating Pott's



fracture it is taught that after reducing any displacement the foot should be flexed at right angles to the leg, the rule being to avoid an extended or inverted position of the foot. To flex the foot beyond the right angle so that it forms an acute angle with the leg would appear to be even a better plan, for when the ankle is placed in the position of full (dorsal) flexion the wider anterior part of the astragalus occupies the intermalleolar space and thus presses aside any encroaching fragment which may be separated from the inner malleolus and also prevents reparative material narrowing the articular cavity. The splint was designed in accordance with these principles. The limb is fixed with strapping to the splint, which is evenly padded, and the tilting of the bottom foot-piece maintains not only full flexion of the foot but also inversion. Massage can be applied as the limb rests on the splint, the knee being well flexed to relax the tendo Achillis, and then, as Pott says, "everything will in general succeed very happily." The splint may be obtained from Messrs. Down Bros., St. Thomas-street, London, S.E.

London. SYDNEY R. SCOTT, B.S. Lond., F.R.C.S. Eng.

THE LEICESTER CREMATORIUM.—The Leicester town council has appointed Dr. C. K. Millard, medical officer of health of the borough, and Dr. Allan Warner, the assistant medical officer, medical referee and deputy medical referee respectively at the Leicester Crematorium. The appointments are made under the provisions of the regulations made by the Home Secretary in pursuance of Section 7 of the Cremation Act, 1902. Before allowing any cremation to take place it will be the duty of the referees to be satisfied that all the requirements of the Cremation Act and the regulations made thereunder have been complied with and that there exists no reason for any further inquiry or examination.

THE LANCET.

LONDON: SATURDAY, AUGUST 1, 1903.

The British Medical Association: The Presidential Address.

DR. T. D. GRIFFITHS, the President of the British Medical Association, chose for his presidential address the obvious subject, "The Evolution of Antiseptic Surgery," and traced the influence of modern medical knowledge on the progress and advancement of all branches of medicine. It is difficult to deliver a plenary address at such a gathering as the annual meeting of the British Medical Association which practically has not been delivered before, and the President of the Association, the orator in medicine, and the orator in surgery have all had this experience in 1903, and their successors will be in the same plight in future years. The occasion for their words being similar to the occasions that have prompted the words of their predecessors they are bound to go over old ground to some extent. The indications for the address of the President in particular are year by year identical and it follows that every medical man who is called upon to occupy the presidential chair is bound more or less to repeat the phrases of past holders of that dignified position. Dr. GRIFFITHS, we are certain, recognised this fact when he chose so well-worn a theme whereon to address his audience as a description of the evolution and consequences of the practice of antiseptic surgery, but we are of opinion that, as he had more or less to say what others had said before him, he could not have chosen a theme worthier of repetition. The wonderful change that has come over the whole theory and practice of surgery since the comparatively recent days when, working with different objects and on different lines, LISTER, PASTEUR, and KOCH attacked the problems which resulted in the formulation of the antiseptic theory, cannot be too much insisted upon. There are now some two generations of medical men who have been entirely brought up in accordance with antiseptic doctrines, and year by year those born in the modern faith are added to the roll of the profession, while the number of those who received their education before the establishment of those doctrines is sadly dwindling under the onslaughts of time. Therefore, it is well that the story of the evolution of antiseptic surgery should be frequently told—and we may add that Dr. GRIFFITHS tells it with clearness and cogency—for otherwise medical men might forget the significance and importance of the revolution that has been worked in times so near to our own as thirty-five or forty years ago.

An interesting part of Dr. GRIFFITHS'S address is that in which he traces the practical application of modern scientific medicine to public health. Here he points out that the majority of thinkers, medical men and laymen alike, are apt to be too optimistic. Sanitary science is a splendid thing, but we, proud of the many practical applications of learned theory to daily use which are comprised under its name, are all inclined to attribute too much to its operation. Dr. GRIFFITHS is, we think, quite justified in saying a warning word, for our public health legislation has not yet justified enormous self-satisfaction. While sanitary science as applied in this country to the lives of the people is responsible for countless benefits to the population our eyes should be open to the equally countless difficulties that attend the administration of the laws regulating State medicine. Whether we are concerned with water-supply, with purity of food, with drainage systems, with accommodation for infectious disease—whatever it may be, we are met with an eternal contest between public and private interests. Upon the whole, in England the public weal prevails and in the end the vested private interest yields, but the progress of the sanitary administration of the country is sorely retarded by constant frictions. As a means of remedying this situation Dr. GRIFFITHS makes the practical suggestion that the power of the medical officers of health of the country should be strengthened and we believe that his proposal will find favour in the eyes of most medical men. He suggests that the county councils should be compelled to appoint county medical officers and that the various urban and rural sanitary districts should be grouped together so that the aggregate of work should be sufficient to constitute a career for a medical officer of health, who must also receive an adequate salary. Dr. GRIFFITHS would entirely do away with the medical officer of health in rural districts who receives £50 for the supervision, which must in most cases be little more than nominal, of a sanitary district comprising as many square miles. No one who has thought over the matter, and certainly no one who has any experience of the conduct of municipal or parochial affairs, can come to any other view than that held by Dr. GRIFFITHS. In the many frictions that occur between public and private interests the medical officer of health should be able to play the part of a strong independent official. To effect this he ought to be placed in an independent position, to be relieved from the responsibilities and ties of private practice, and to be paid properly.

With another suggestion made by Dr. GRIFFITHS with the same end—that of strengthening the sanitary administration of the kingdom—we are also in accord. He desires to see the President of the Local Government Board, in whose department the sanitary administration of the country is vested, placed upon the same footing as the other great Ministers, the Secretary of State for War, the Secretary of State for Foreign Affairs, and the Home Secretary, for example. The present President of the Local Government Board, Mr. WALTER LONG, enjoys Cabinet rank, but his office is not one that necessarily carries with it a seat in the Cabinet, while a striking difference between his salary and that of the salaries of the great officers of State to whom we have alluded accentuates the mark that is drawn in the official mind between them. We entirely sympathise with the view that the Minister who has charge of the public health of the community ought to be placed in the highest possible public position in the councils of the State. So much is this principle recognised by many medical men that the appointment of a Minister of State

for Public Health has been often mooted in our columns and elsewhere. Such a Minister exists in some foreign countries and perhaps the post will be created sooner or later with us, but this is rather a matter for the future. The obvious step forward that should be taken at the present time is to elevate the head of the department of State on whom the duties of a Minister of Public Health fall to a position comparable with that of the heads of the other great departments of State.

The British Medical Association: The Address in Medicine.

IN selecting the infective and infectious diseases as the subject of his Address in Medicine Dr. FREDERICK ROBERTS chose a subject which is well calculated to meet with the approval and to appeal to the diverse tastes of his audience. Indeed, owing to the popular interest which always attaches to the authoritative utterances of the distinguished physicians who year by year are intrusted with these addresses in medicine, and owing to the wide dissemination of the addresses themselves in the lay press, the occasion has been afforded for appealing directly to the public and vindicating the general policy of the medical profession, while certain truths have been enunciated well calculated to impress on governmental, municipal, and sanitary authorities their duties and responsibilities in the safeguarding of the public health.

Dr. ROBERTS takes full advantage of his opportunity and opens the flood-gates of oratory on a subject on which the medical mind is particularly sensitive. In combating and limiting the ravages of infectious disease among all classes of society Dr. ROBERTS points out that our aims are peculiarly single-hearted, disinterested, and beneficent; our efforts, however, in these directions were often traduced by scoffing and slanderous misrepresentation. And in this connexion the conscientious objector, the anti-vivisectionist, and certain other faddists with an "anti" before their descriptive titles come in for a just measure of censure and rebuke. On the other hand, we as a profession are exhorted "never to relax in our efforts to promote the good cause and to encourage, to develop, and to enforce every measure, scientific or practical, which has for its object the mitigation or prevention of disease." In connexion with the attitude of the medical profession in respect of the use and abuse of alcohol, both in conditions of health and of disease, public opinion has recently been stirred by the so-called "International Medical Manifesto" and by the ill-considered and ill-informed vaporings of sensational journals. On this subject Dr. ROBERTS expresses some temperate and rational criticisms. Although, owing to the limitations of his subject, he could not touch on the whole question in its general bearings, nevertheless, so far as the treatment of infectious disease is concerned, his therapeutic postulates entail the discriminating use of moderate quantities of alcohol. He is of opinion that the judicious administration of alcohol has within his own experience been the means of saving many a grave and almost hopeless case from death. This is the sort of positive evidence which takes a great deal of gainsaying. That medical men, both in past times and nowadays, have prescribed alcohol inconsiderately is another matter. The consumption of alcohol in some of our large hospitals has at times been unduly great and no one denies this. But when a physician of Dr. ROBERTS'S position testifies to the value of alcohol, properly exhibited, as a life-saving remedy, he is a bold man who resolves in his practice to dispense with its aid.

Although in its more extreme manifestations the author of the address does not appear to be very much in sympathy with the "absurd, irrational, and most mischievous specialism which is so rampant at the present day," nevertheless, as subsidiary to the more ordinary bedside methods which come within the reach of all practical clinicians, he gives full credit to the recent developments, both bacteriological and sero-therapeutic, in the scientific diagnosis and treatment of infectious disorders. At the present day there is an undoubted danger lest the rising generation of practitioners should come to rely too little on their own personal observations and too much on the revelations of the microscope and test tube, and in this connexion Dr. ROBERTS suggests "that while the modern medical student has immense advantages he labours under a decided disadvantage from the point of view of clinical observation, as compared with those of us who served an apprenticeship and became familiar with, at any rate, the more common infectious diseases, even before we started at a medical school." Dr. ROBERTS thus rehabilitates the much debated question of apprenticeship in a novel and interesting fashion, but not, we think, with any serious idea that medical education will ever return to its old course. We know well the many advantages that some apprentices enjoyed; but we know also with many of them their sojourn with a practitioner was the purest waste of time.

The British Medical Association: The Address in Surgery.

THERE is no more obvious subject for the contemplation of members of the British Medical Association than the progress which surgery has made within recent years and Mr. MAYO ROBSON was happy in the choice of this theme, for he himself has taken no small share in the advancement of surgery during the last 30 years. Especially has progress been made in the surgery of the abdomen and on this subject no one is better qualified to speak than the ingenious orator. Thirty years ago there was no abdominal surgery. It is true that a few operations were at rare intervals attempted, such as colotomy, especially the lumbar form, and gastrostomy, but beyond these hardly anything was done. The surgeons of those days were acting rightly in refraining from meddling with abdominal disease, for the results which followed the few operations attempted were, indeed, appalling. Mr. MAYO ROBSON quotes statistics showing that in 1870 in four London hospitals, of 11 cases of ovariotomy nine died. Even the operation for strangulated hernia had a mortality of about 50 per cent. in those cases in which it was considered necessary to open the sac. For nearly all abdominal conditions, which would nowadays at once be submitted to the surgeon no operation was attempted, and

the surgeon was practically helpless even in the very few cases in which his aid was sought, for it was never sought until too late.

It was not until the memorable dawning of the new era of antiseptic surgery that it became really allowable to open the abdomen in order to treat some morbid condition contained therein. The wholesome dread of peritonitis, arising they knew not how, deterred the older surgeons from interfering actively with the abdominal viscera even when merely a volvulus of the intestine or a peritoneal band was producing acute obstruction, and they had perforce to content themselves with manipulation, inversion, and succussion. Rarely, very rarely, these manœuvres were attended with success and these occasional successes seemed to justify their employment even in cases in which from our present knowledge it is obvious that nothing but harm could result from such blind and violent methods. The diagnosis was often obscure and, indeed, it cannot be said that we have advanced very far in mere diagnosis, though some distinct progress has been made. At the present time the exact diagnosis is often postponed till the abdomen has been opened and then it is generally quickly made. In this practice there is no little danger of occasional harm resulting, for the more exact the diagnosis previously to the operation the more correctly can the surgeon choose his incision, and the more quickly and easily can he proceed to remedy what is wrong. We would not suggest the postponement for one hour of an operation in order to perfect the diagnosis when an operation is clearly indicated, but there is some risk of exploratory laparotomies being unnecessarily employed.

The progress of abdominal surgery is well illustrated by Mr. MAYO ROBSON by accounts of the operations performed on most of the abdominal viscera, the stomach, the intestines, the kidneys and the ureters, and the uterus, especially in connexion with abnormal gestations, but it is perhaps in the latest achievements of the surgery of the abdomen that interest mainly centres and this is the surgery of the pancreas. This is almost the creation of the last five years. Cysts of the pancreas had previously been opened and drained; now, however, the operations on the pancreas are numerous, and Mr. MAYO ROBSON has himself operated on nearly 100 cases. Acute pancreatitis is a most striking disease; it arises with symptoms closely resembling acute intestinal obstruction and in many cases the abdomen has been opened and no obstruction found, but an acute pancreatitis has been recognised. Recently in some of these cases surgical intervention has been successful and more is to be hoped for in the future. Many cases which have been described as malignant disease of the head of the pancreas have been shown to be cases of chronic pancreatitis and recovery has ensued after drainage of the duct of Wirsung through the bile passages. Calculi of the duct of the pancreas have also been removed, in one case by an incision through the substance of the pancreas. Such modern developments of surgery as these and others quoted by Mr. MAYO ROBSON in his instructive address show not only the extent of the recent work which has been done in the surgery of the abdomen but fill us with hope for the future. At the present time little appears to remain for the surgeon to accomplish, but our experience should teach us that in directions at present undreamt of surgical activity will achieve triumphs which may dwarf what has hitherto been accomplished. It is only reasonable to expect rapid advance.

Annotations.

"Ne quid nimis."

ANOMALOUS SMALL-POX AND ITS LESSONS.

THE variations in type which communicable diseases are liable from time to time to assume are eminently interesting from the point of view of the epidemiologist, but for the administrator such vagaries are not unlikely to give rise to awkward predicaments, resulting in some instances in unfounded charges and undeserved rebukes. The public are so accustomed to dogmatic statements that they are prone to attribute hesitation on the part of a medical man to ignorance rather than to accumulated wisdom. An instance of this nature has for a considerable time been before us at Trinidad, where a disease which has presented unusual symptoms, and which has since manifested more distinct features of small-pox, has puzzled the medical profession of the island for many months. Recently, too, phenomena of a somewhat anomalous nature have occupied the attention of the medical profession at home, more especially in Nottinghamshire and at Cambridge. In each instance much excitement has been occasioned and columns of the local press have been devoted to public discussion of the subject. Much of this undue disturbance is the result partly of the demand on the part of the public for a precision of knowledge which the facts do not justify and partly of a tendency on the part of the medical profession itself to meet that demand by a certainty of diagnosis which is not always supported by evidence. It is obviously difficult to diagnose that which has neither been described nor seen, and it would be unreasonable to make the medical profession responsible for what may not inaptly be termed a freak of nature. All that can be fairly asked is that reasonable precaution shall be exercised and that where a doubt exists the action taken in consequence of such doubt shall be that dictated by the first principles of preventive medicine—i.e., that the public safety should always receive the benefit of that doubt and that a disease which may not improbably prove to be small-pox should, so far as preventive measures are concerned, be treated as if it were small-pox. Although the number of cases of small-pox has increased within the last few years it is still true that the majority of medical practitioners have never seen a case of the disease, much less such a selection of cases as would enable them to make a correct diagnosis in the face of anomalous symptoms. But it has to be borne in mind that there are now many medical men who are familiar with the disease and whose opinion in a case of doubt would be of the greatest value. The services of such experts can be easily procured, and the sanitary authority which hesitates to procure such advice on the score of expense does not show a high appreciation of its responsibilities. Judging from recent events which we have no need to particularise it seems to us that it is very desirable to make public a doubt rather than to proclaim a definite opinion which the facts are insufficient to justify. This is more especially the case when the dogmatism is likely to involve a serious risk to the public health and discredit to responsible public officials. In endeavouring to arrive at a conclusion in the case of a disease such as small-pox the greater the number of cases which can be examined the smaller the margin of error, and it is possible by examining a number of cases to obtain, as it were, a complete type of

the disease. If photographs of the cases occurring in Trinidad and other places are examined it is possible to select from each group some which are absolutely anomalous and others which are absolutely typical, and we cannot but infer that were a sufficiency of cases seen in each instance there would be less liability to mistake. Wherever there is the least doubt isolation should be practised and vaccination or revaccination at once carried out and the public will learn in time to appreciate the fact that preventive medicine acts upon doubts as well as upon certainties. In this connexion we would appeal to the lay press, upon which many of the public rely solely for their information upon all subjects, not to make absolutely unfounded statements. For instance, a paragraph recently appeared in a London morning paper in which Dr. S. Monckton Copeman was credited with having said that the Cambridge epidemic was neither chicken-pox nor small-pox but a complaint hitherto unidentified. As a matter of fact Dr. Copeman never said any such thing. Incorrect statements such as this are dangerous in that they lead the "man in the street" to neglect precautions, above all that of vaccination.

THE HEALTH OF THE ARMY.

IN an annotation in THE LANCET of July 25th, p. 246, we dealt with the special memorandum issued by Sir William Taylor, Director-General of the Army Medical Service, in regard to the deterioration of physique said to be observed among intending recruits. We are not, however, desirous of discussing here the significance of the memorandum, except in so far as it raises suspicions as to the fitness of the men actually accepted. There appeared recently the Army Medical Department Report for 1901 and from this we learn that in the army as existing on a peace footing the mortality-rate for the United Kingdom was 4·71 per 1000. For the last eight years the rates under similar conditions in the armies of continental powers have been: France, 4·58 per 1000; Italy, 4·87 per 1000; and Russia, 5·32 per 1000, so that it will be seen that our British results are nothing much to boast of. The figures given for France are not regarded with any specia satisfaction in that country and Dr. Granjux has been seeking to elucidate the influences to which they are to be attributed. He finds that the rate ranges from 3·61 for the "ouvriers d'artillerie" to 7·88 in the case of the "infirmiers" who may be taken as corresponding roughly to our hospital orderlies. These figures are, he believes, to be correlated with the facts that the artillery workmen are usually volunteers and pursue their avocation in well-ventilated shops, while the men in the second category are exposed to the risks incidental to insanitary conditions and contagion. Our own army returns show a minimum rate of 3·51 for the Household Cavalry and a maximum of 7·92 for the regimental depôts, while the figures for the garrison staff and departments are also high, being 5·63. Causes somewhat similar to those mentioned in connexion with French soldiers may therefore be traced in the case of the British. It will be noticed that the figures for the German army are not given above. They are said to be only 2·32 per 1000, a fact which "gives furiously to think." The difference, as compared with France, is declared to be due to the differences in the birth-rate, and consequently in population, of the two countries. Each keeps up a huge standing army, but as the resources of Germany are larger she has not to enforce conscription with the same thoroughness as is necessary in France and therefore doubtful material has not to be utilised to the same extent. But what explanation is to be advanced in regard to British troops? An inquiry dealing with this point might well be undertaken by the Commission which Sir William Taylor suggests should, with the advice of the Royal Colleges of Physicians of London and Surgeons of England, be appointed to consider the question of recruiting. In a letter to us, which has also been communicated to the lay press, the Duke of Wellington, who is President of the National Service League, points out that a fairly accurate indication of the improvement or the reverse of the physique of an army can be obtained by taking statistics relating to a long series of years. "Nor is it possible," he says, "to escape the conclusion that if the physical standard of an army is improving or deteriorating it must be at least to some extent a barometric indication of a similar tendency in the national physique." It must not, of course, be forgotten that in this country our army recruits are taken for the most part from the unskilled labouring classes, while in countries where conscription is in force the army represents all classes of the population. But even taking this fact into consideration, the Duke of Wellington states that statistics show an undoubted tendency to deterioration in the physique of recruits and in the health and stamina of our army as compared with that of Germany.

COMPLIMENTARY DINNER TO MR. JONATHAN HUTCHINSON.

Sir H. Greenway Howse presided on July 23rd at the complimentary dinner given at the Trocadéro Restaurant in honour of Mr. Jonathan Hutchinson. Covers were laid for 154 guests. At the high table to the right of the chairman were seated Mr. Jonathan Hutchinson, Dr. Robert Barnes, Sir J. Fayrer, Mr. W. H. M. Christie, Dr. G. W. Potter, Rev. T. R. R. Stebbing, Dr. R. Farquharson, Sir John Tyler, and Mr. Andrew Clark; to the left were seated Sir Thomas Barlow, Sir Henry Burdett, Sir Anderson Critchett, Dr. Theodore Williams, Sir Alfred Cooper, Professor Adami, Dr. G. A. Heron, and Mr. H. T. Butlin. Letters regretting their inability to attend were received from Lord Strathcona, the Attorney-General, Sir R. Douglas Powell, Sir T. Lauder Brunton, Sir Henry Thompson, Sir William H. Broadbent, Professor T. Clifford Allbutt, Dr. Peter Horrocks, Mr. F. Eve, and others. Sir H. G. Howse, in proposing the health of Mr. Jonathan Hutchinson, said that when he (Sir Henry Howse) entered the profession in 1861 the name of Mr. Hutchinson was then fully before the medical profession. Referring to the journeys which Mr. Hutchinson had made in South Africa and India, Sir Henry Howse asked who amongst them at the age of 73 years would care to undertake long and arduous journeys in search of facts which might support or might damn some hypothesis of interest to the profession. He thought that such a record was most remarkable. He would remind them that that dinner was held on the seventy-fifth birthday of Mr. Hutchinson. Mr. Hutchinson had always taken great interest in medical studies and also in public matters, for when the London County Council put forward its proposition to open Lincoln's Inn Fields Mr. Hutchinson persuaded the Council of the Royal College of Surgeons of England to abandon its attitude of opposition to the scheme and to help it forward. Sir Joseph Fayrer, who also spoke to the toast, remarked that he always read Mr. Hutchinson's books with profit and had learnt to look upon him with profound respect. What had struck him as most deserving of imitation was the energy with which Mr. Hutchinson had pursued his studies up to his seventy-fifth year with fidelity of conscience and with the true scientific spirit, always striving to ascertain what was right simply for the sake of right. He (the speaker) had been asked to refer to what Mr. Hutchinson had done for the colonies and he wished to express the gratitude of those young men who had come from the colonies. Sir Joseph Fayrer concluded by regretting that no public honour had been bestowed

on Mr. Hutchinson. Mr. Hutchinson, in thanking those present for the cordial way in which they had drunk his health, referred to the healthy feeling of pride which he experienced in knowing that he had gained the esteem of so many influential friends. Such recognition helped him on in his work and he thanked Sir Joseph Fayrer for mentioning fidelity of conscience. He was willing to claim fidelity of conscience because he had been brought up in the society of Quakers, amongst whom the one dogma was conscience. Turning to the question of leprosy Mr. Hutchinson related how when visiting Robben Island he saw over 500 persons confined for life because of the inattention of the medical profession to facts. In his opinion leprosy was not contagious and yet on Robben Island there were confined the children of white parents condemned to association with Hottentots and Kaffirs, and he contended that therein lay a motive for work for what remained of his life—to render the medical profession alive to its duty in regard to leprosy. In the course of his concluding remarks Mr. Hutchinson said that he believed poetry inspired him with motives for dry scientific work and he had always tried to act up to the motto of the German poet, "Keep true to the dream of your youth." The toast of "Our Guests" was given by Sir Thomas Barlow who said that their presence there was in honour of one who had given a rare example of unremitting labour and practical enthusiasm not only in surgery and pathology but also in the cause of education. There was thus a special fitness in what he called the eclectic character of the gathering that evening in honour of Mr. Hutchinson. The toast was acknowledged by Mr. Christie, the Astronomer Royal, and the company separated after the chairman had responded to the toast of his health proposed by Sir Alfred Cooper.

THE DANGERS OF THE HANSOM CAB.

THERE seems to be but one limit to the extent of the casualties for which the hansom cab may be responsible. That limit is the fortunate circumstance that these vehicles usually carry only two persons besides the driver. We are led once more to animadvert upon the many and dangerous defects of the "two-wheeled hackney coach" by the tragedy that occurred in Piccadilly on July 26th. It will be remembered that on that day a hansom cab horse bolted, that the driver was flung from the box against the railings of St. James's Church, sustaining so severe a fracture of the skull that he died very shortly after, and that of the two occupants one met with a fate similar to that of the driver, while the other is still in St. George's Hospital under treatment for fracture of the anterior and middle fossæ of the base of the skull and fracture of the lower jaw. It may be inferred that the bolting of the horse is no fault of the hansom cab. Even this is only true to a certain extent, for according to some accounts of this accident the horse previously to bolting had slipped several times on the wood pavement. This, no doubt, unsettled the horse's nerves, for there is no animal so prone to fits of unreasoning terror as a horse. Moreover, owing to the arrangement of a hansom cab and to the leverage which it exerts, should the horse slip it is only able to recover itself with great difficulty. The chances, too, of danger to those inside the vehicle should any accident occur to the horse are much greater in the case of the hansom cab than in that of any other kind of carriage in common use. A hansom cab is easily upset, is difficult to get out of, and is so constructed as to inflict a maximum of damage upon those inside should the vehicle be overturned or be violently jolted. In the latter case, not to mention severe contusion or fracture of the legs, there is the risk of being guillotined, or at the least partially scalped, by means of the edge of the folded window. This is no mere fanciful idea. It is not long since Mr. Chamberlain illustrated in his own person a mild form of the latter accident, of which we have seen in a London hospital an extreme example. In this case the cab-horse fell, the occupant's hat flew off, and the top of his head coming violently into contact with the window, which was "up," the scalp was split across almost from ear to ear and the unfortunate victim reached hospital with the anterior portion hanging over his face. When it is remembered with what peculiar difficulty a hansom cab is entered, how if there be mud some of this is almost inevitably brushed from the wheel on to the coat or skirt of him or her who enters, and that besides actual dangers the hansom cab is thus beset with minor inconveniences, it may well be wondered how it is that this form of public conveyance retains its place in the public use, if not in the public esteem. A hansom cab which minimised certain of these inconveniences was described in THE LANCET of May 9th, p. 1311. If the four-wheeled cab were but further improved—it has made some strides of recent years—and particularly if it could be easily converted into an open carriage in fine weather, we feel certain that the number of hansom cabs and with it the number of cab accidents would speedily be reduced—a "consummation devoutly to be wished."

POOR-LAW GUARDIANS AND VACCINATION FEES.

THE Vaccination Act of 1898 produced considerable modifications in the duties of public vaccinators, chiefly in the direction of increasing the amount of attention that was thenceforth to be given to individual cases, and in other respects it made a variety of important changes in the system which had previously been in operation. Vaccination stations were abolished and instead of the children being taken to the public vaccinator he was required to attend at their homes in the event of the parents preferring this course. Only glycerinated calf lymph was to be used and attention to antiseptic methods became essential. It was easy to foresee that this multiplication of duties would involve additional expenditure and our columns have on many occasions borne witness to the annoyance felt by boards of guardians at the increased outlay under the head of vaccination fees since the beginning of the year 1899. By the Vaccination Order of 1898 the Local Government Board fixed a maximum and a minimum charge for the operation, and during the last two or three years a number of boards of guardians have, by adopting resolutions and otherwise, expressed their anxiety to have the official scale of fees reduced. To take a comparatively recent instance, the Wigan board of guardians at a meeting held last May had before them a return extending over several years and showing that the fees payable to public vaccinators were £222 for the half-year ended Michaelmas, 1898, and £212 for the half-year ended Lady-day, 1899, while they were £1069 for the half-year ended Michaelmas, 1902, and £935 for the half-year ended Lady-day, 1903. The guardians resolved to prepare a memorial to the Local Government Board, calling attention to these facts, praying for the issue of a new Vaccination Order with a reduced scale of fees, and suggesting that the fee should be 2*s.* 6*d.* for successful primary vaccination or revaccination at the home of the person vaccinated and 1*s.* 6*d.* for successful primary vaccination of any person other than a child at the surgery or for revaccination at the surgery. In support of this proposal the guardians asserted that the above charges were quite as high as an ordinary country practitioner would make to his patients, but this statement is inaccurate and misleading, for the Wigan Medical Guild some years ago passed a motion to the effect that the minimum fee for vaccination at the surgery should be 2*s.* 6*d.* The usual fee for vaccination at home is 5*s.*, but among the working classes vaccination at home is not often asked for. Now what has the public vaccinator to do for the 5*s.*, or at most 6*s.*, which

he receives? From the list supplied by the vaccination officer he has to advise by letter or post-card the day on which he proposes to visit and to vaccinate. If the parents are out he has his journey for nothing. If there is epidemic disease in the house he has to postpone the operation and to communicate with the medical officer of health. If the child is in and the parents are willing to have the operation performed he has to render the arm aseptic, to vaccinate, to put on an aseptic pad, and on the eighth day following he has to pay a second visit, and if there is any inflammation about the arm he has to treat it. He has then to make entries in his books, to sign certificates, and to send them to the vaccination officer. It must be remembered also that he has to make many futile visits, owing to changes of residence, absences from home, and sickness. We trust that the Local Government Board will give no encouragement to this proposed lowering of the remuneration for what is in reality very responsible work very efficiently performed.

THE RELATIVE MERITS OF A CHEMICAL AND BACTERIOLOGICAL EXAMINATION OF WATER.

OWING mainly to the recent pollution of the river-derived water-supplies of the metropolis by the floods, the question has been raised once again as to the relative value of the chemical and bacteriological analysis of water for drinking purposes. It may be useful, therefore, to summarise the position which both methods of examination at present occupy in their bearing upon the detection of pollution. The view that the chemical composition of the water always bears a direct relation to the number of micro-organisms receives very little support, unfortunately, from a very large number of experiments that have been made in this direction. It is true that frequently a large number of bacteria is associated with an excess of solid matters, but the same chemical conditions may be found to exist when the number of organisms has diminished to vanishing point. Conversely a water with little or no solid matter may show a considerable number of organisms. Again, there is little doubt that the detection of actual sewage contamination by bacteriological methods is much more delicate and definite than that offered by chemical analysis, though it may not be possible to identify the specific organism. In the case of the typhoid fever outbreak at Maidstone, for example, a bacteriological examination of the infected water made about ten days after the specific infection had taken place failed to demonstrate the existence of the bacillus typhosus, yet there was no doubt at all about the bacillus coli being present. In the Worthing epidemic, again, the specific organism of typhoid fever was not detected in the infected water-supply, although the presence of the bacillus coli was readily discovered. It has, in fact, been shown that a recent contamination of a water-supply by sewage can easily be detected by bacteriological means even when the pollution is so slight as one part per million, a microscopic degree of pollution which it is very doubtful chemical methods would be able to detect or at any rate to such an extent as to allow of an exact diagnosis being made. The value of bacteriological analysis was largely discounted in the early days of bacteriology by the fact that the number of bacteria was regarded as a basis of decision, while no attention was paid to the determination of the species of bacteria present in drinking water. It is this latter departure in the bacteriological examination of water which has rendered great service in enabling a definite conclusion by bacteriological methods to be drawn as to whether or not a water is polluted. Thus the position is best summed up by saying that whereas chemical analysis may be of value when an exact quantitative analysis is made, in the case of the bacteriological method the analysis should be decidedly qualitative. The two methods, strictly speaking, should go hand in hand, for each is helpful to the other in elucidating the exact history of the water in question. It is well to bear in mind, however, that the purification of water by filtration through sand is essentially a biological process and hence the purifying efficiency of the filtering bed from a pathogenic point of view can only be ascertained by resorting to bacteriological methods of examination. Micro-organisms and not chemical substances are, after all, the real *materies morbi*, and though the presence of chemical substances may, of course, indicate impurity, yet it may not follow that it is of a specifically dangerous kind.

THE DEMONOLOGY OF THE NEW TESTAMENT.

IN the July number of the monthly paper of the Guild of St. Luke appears an article by Surgeon-Colonel F. H. Welch upon the above subject. Demoniac possession is a favourite subject for discussion, for it embraces a certain part of the two sciences of medicine and of theology. But our knowledge of mental processes is exceedingly vague and no one can say how we think. In some cases of insanity or of defective mental process there is some obvious gross lesion, but in how many others is there nothing of the kind? Surgeon-Colonel Welch's conclusion is as follows: "I throw in my lot with those who regard demoniac possession as but an expression of old-world ignorance, and these examples in the New Testament as but illustrations of mental disorder—insanity in one or other form—clothed in the phraseology and indicative of the beliefs of that day." He allows that with regard to Our Lord's treatment of such cases "there seems no resting-ground between denying the Gospel narrative and acknowledging the outcome as miraculous as viewed by our present knowledge and experience." But he goes on to say that possibly an ampler knowledge of the laws of God and Nature in the distant future will remove all these disease-cures from the sphere of miracles as now understood by us. This is quite possible, but at present so far as we can see the question is insoluble. It is not of much help to say that the demoniac possession of the New Testament is insanity, for then arises the further question, What is insanity? It cannot be denied that there are forces, both physical and psychical, of which we know little or nothing. A few years ago radio-activity was unknown, and in the domain of psychic forces strange things happen "east of Suez" and in out-of-the-way parts of Africa—witness Captain Wellby's experience in Abyssinia upon which we commented in THE LANCET.[1]

DYSPNŒA AFTER REMOVAL OF A TRACHEOTOMY TUBE.

ONE of the most troublesome of the after-effects of tracheotomy is the difficulty which is often experienced in removing permanently the tracheotomy tube. The child, for this complication is practically only seen in children, is often able to dispense with the tube for some hours, but suddenly great dyspnœa occurs and if the tube is not re-inserted death may ensue. This dyspnœa may occur during the waking hours, but it is especially prone to appear during sleep, the difficulty of breathing awakening the child. In the production of this dyspnœa two distinct factors seem to be involved. One effect of the long continuance of a tube in the trachea is that it leads to the formation of granulations around the edges of the opening into the air-tube and wherever the tube touches the mucous membrane. These granulations offer obstruction to the inflow of air when the tube is not in position, but the insertion of the tube tends to push them aside. Later there may be a true stenosis of the trachea from the contraction produced by

[1] THE LANCET, Sept. 9th, 1899, p. 731.

the cicatrisation. The other element in the production of the dyspnœa is spasm of the glottis. So long as the tracheotomy tube is in position there is no need for the glottis to be kept open for breathing and therefore, as it has been well put, the usual rhythm of the laryngeal muscles has been interrupted by the enforced cessation of all exercise of function in the larynx due to the tracheotomy. When the tube is removed there is great liability to the production of irregular laryngeal spasm and this is especially likely to occur during sleep, for during the time the child is awake his attention is directed to keeping the glottis in an open position for inspiration, but when the child is asleep this voluntary assistance is withdrawn and the glottis may close. In many cases of dyspnœa after the removal of a tracheotomy tube both these causes share in its production. The principles of treatment of this condition are, in the first place, to take care that the tube is not retained longer than is really necessary, for the stenosis and the muscular spasm are both more likely to develop the longer the tracheotomy tube is employed. In the second place, the spasm tends to pass off as the glottis becomes again active, so that the best plan is to leave out the tube as much as possible, care being taken that it can be re-inserted as soon as necessity arises. This can only be done by having the child watched continuously during the first few nights after the removal of the tube. If granulations are present they must be treated either by removal or by the application of suitable astringents. A very interesting case of dyspnœa after removal of a tracheotomy tube was published in THE LANCET of July 25th, p. 225; in this case intubation was successfully employed to overcome the difficulty of breathing.

TH_ GOAT AS A PREVENTIVE OF DISEASE.

THE somewhat startling news that the lower classes of Cambridge are trusting to the presence of a goat to protect them and their houses from the infection of small-pox is only another proof that primitive barbarism dies out very slowly even under the shadow of colleges and laboratories dedicated to the highest forms of scientific research. The Cambridge dairyman who sends his goat into and round the dwellings of his neighbours in the area infected by small-pox along the Newmarket-road is said to be giving expression to a rooted local belief. Indeed, he has only extended to human beings the universally-found rustic superstition that goats bring good luck and insure the health of cows and other animals. It is common in Lincolnshire, for instance, to keep a goat on the ground of its being "healthy for cattle." Among old-fashioned cattle-men in Virginia the goat is held to be a preventive of disease and a clearer-away of noxious herbs. In Ulster a goat grazes among the cows of the small farmers in order to bring good luck and to eat poisonous weeds, and on many large dairy farms in the south of England a goat or donkey is sent out with the herd in order, as avowed, to prevent premature calving. Finally, in large London stables a goat is often kept either to lead the horses out in case of fire or for no reason at all. Why are goats kept? and what is their use? A writer in *Notes and Queries*, where the question of the "Goat and Folk-lore" was discussed some years ago, was inclined to the belief that the goat's effluvium kills microbes. But he was met by the objection that *a fortiori* the pig would be the better antiseptic agent of the two. The argument was fallacious, yet the goat is not a microbe-killer. It is probable that his luckiness and health-giving properties have a pagan origin and that he remains symbolically a relic of the days of witchcraft. The witches of the Walpurgis-night rode on goats who were devils in disguise, and "it is possible that goats are placed amongst other cattle because the witches will not hurt animals which are under the protection of their friends." Whatever excuses and explanations are urged nowadays the goat remains a creature of the black art, just as the cuckoo, who still figures in the oaths of German peasants (*"der Kuckuk soll es holen!"*), is properly the bird of (1) the Devil; (2) Woden; and (3) Indra. The goat, by-the-bye, appears in Scandinavian mythology as the carriage-horse of Thor.

THE PROFESSORSHIP OF SURGERY AT THE UNIVERSITY OF CAMBRIDGE.

ON July 27th Mr. Howard Marsh, F.R.C.S., was elected to the chair of professor of surgery in the University of Cambridge in succession to the late Sir George Murray Humphry. Since the death of the late professor seven years ago the professorship has been suspended. We offer our sincere congratulations to Mr. Howard Marsh upon the honour which has fallen to his lot in being chosen to fill such a dignified and responsible post. At the same time we understand that though it is incumbent upon the professor to be in residence during term, Mr. Howard Marsh intends to continue much of his London work, although he will no longer be a member of the active staff of St. Bartholomew's Hospital.

A DANGEROUS PAMPHLET.

WE have received from a medical man a pamphlet entitled "Opium Smoking as a Therapeutic Power according to the Latest Medical Authorities" which had been placed in the hands of one of his patients. It bears on the cover an advertisement of a firm of dispensing and family druggists—Messrs. Gamble and Company, of 4, Edwardes-terrace, Kensington-road, Kensington, W.—and consists of a detailed description of a pipe for opium smoking supplied by this firm, and minute directions for its use. It is difficult to imagine a more pernicious or dangerous document, the avowed object being to encourage the use of opium by patients without any medical supervision in a variety of ailments and in a seductive form in which they are liable to lose sight of the fact that they are drugging themselves until, perhaps, a permanent habit has been acquired. The list of diseases for which this opium-smoking is suggested in this pamphlet comprises, amongst others, all neuralgias, coryza, sciatica, lead colic, pneumonia, peritonitis, "spasmodic attacks of asthmatic breathing affecting patients with kidney disease," gastralgia, "the fidgets," excessive fatigue, excitement, and sleeplessness. The effects and indications for use are described in quasi-scientific terms and one or two authorities are quoted. It is, moreover, stated that a dangerous intoxication by opium vapour cannot be reached by the smoker at his will, and the use of the drug in this manner is referred to as "this splendid and safe therapeutic agent." The little reverses which happen to beginners are described and directions are given how to overcome or to avoid them. The apparatus, which is somewhat complicated, is made up in sets, and an italicised note at the end of the pamphlet states, "these sets of apparatus and sterilised extract have been supplied to many patients for several years past and have been sent by Gamble and Co. to all parts of the world." The pamphlet is dated 1886 and has thus been in circulation for 17 years and is presumably still distributed. We have no intention to decry the use of opium in the form of inhalation as a therapeutic agent when recommended after due deliberation by a medical man, although it is little used in this country, but the irresponsible advertisement by druggists comparable to that of a patent medicine is on all grounds most strongly to be deprecated. That opium is a very useful remedy in some of the diseases mentioned is, of course, an undoubted fact, but there are few medical men who would order opium in any form for neuralgia or for asthma, more

especially the asthmatic dyspnœa of chronic renal disease, without very careful consideration of the dangers, while its use in lead colic or in some forms of abdominal disease and peritonitis may be more immediately harmful. No better example of the evils of the present extensive advertisement of medical preparations, proprietary and otherwise, without any restriction is needed and we hope that the firm of druggists above mentioned will at once withdraw so improper a document from circulation if they have not already done so.

THE DISTRIBUTION OF PLAGUE.

As regards the Cape Colony the medical officer states that for the week ending July 4th the condition of the various places mentioned below was as follows. At Port Elizabeth 1 case of plague was discovered during the week—namely, 1 native male on June 29th. At the Plague Hospital 1 native male died, leaving 6 cases under treatment. Plague-infected rats continued to be found in the town. At East London no case of plague was discovered. At the Plague Hospital no patients died or were discharged during the week; 5 cases remained under treatment. At King William's Town no case of plague was discovered. At the Plague Hospital no patients died or were discharged during the week; 5 cases remained under treatment. Plague-infected rats continued to be found in the town and were also found in the village of Kei-road. At Graaff-Reinet and also at Burghersdorp no case of plague and no plague-infected rats were found. At Queenstown a native male who died with symptoms of pneumonia on June 25th has since been found to have suffered from plague. During the week 3 cases of plague were discovered—namely, 2 native males and 1 native female, all of whom died. At Stockenstroom and also at Riversdale no case of plague in man or animals was discovered. As regards Hong-Kong the Colonial Office has received information that for the week ending July 18th there were 18 cases of plague and 9 deaths from the disease, while for the week ending July 25th there were 13 cases and 11 deaths. As regards Mauritius the Colonial Office has received information that for the week ending July 23rd there were 4 cases of plague and 3 deaths from the disease.

ST. BARTHOLOMEW'S HOSPITAL.

THE report of the Mansion House committee, a committee nominated by the Lord Mayor in pursuance of a resolution passed at a meeting of the appeal committee of the governors of the hospital held at the Mansion House on Jan. 19th, has just been published. The committee has come to the following conclusions. With regard to removing the hospital from its present site it considers that it is impossible in the public interest to entertain such an idea. With regard to the buildings the committee states that it is satisfied that important additions to, and a considerable rearrangement and improvement of, the existing buildings are necessary and it considers that with the additional land purchased from Christ's Hospital there will be ample room for the provision of a hospital with every modern appliance. The method proposed is that of a gradual building scheme under which the improvements and alterations contemplated can be secured as soon as funds are obtained. With regard to the financial position of the hospital the committee states that the evidence showed that its properties and revenues are judiciously and economically administered and that the cost per bed compares favourably with that of other hospitals, but it also finds that it is impossible to hope that funds for the additions to, and rearrangement of, the hospital can be obtained from the resources of the hospital itself. It therefore considers that the governors of St. Bartholomew's Hospital are fully justified in appealing to the public for assistance and it heartily commends this appeal to the consideration of the citizens of London and of the public generally. The committee does not think that it would be justified in concluding its functions without placing upon record its opinion that from the evidence brought before it the administration of the hospital has been conducted by the governors in a wise and enlightened spirit with due regard to economy and in the best interests of the patients.

THE INDIAN MEDICAL SERVICE.

WE are glad to receive official information to the effect that proposals for improving the pay and general condition of the Indian Medical Service have now been formulated by the Government of India and that they will shortly be taken into consideration by the Secretary of State for India in Council. It is hoped that the revised terms will be published in September.

WITH reference to the annotation under the heading "Insanity and Racial Fecundity" published in THE LANCET of June 20th, p. 1757, we have been informed that Dr. John Macpherson fell into an error in quoting some of the figures given in his article as he counted the lunatics (as distinguished from idiots) twice over in his total. He gave the numbers of all lunatics and idiots under official cognisance in Ireland as 28,187 in 1881, 36,133 in 1891, and 44,884 in 1901, but the correct numbers were 18,413 in 1881, 21,188 in 1891, and 25,050 in 1901.

THE Royal Medical and Chirurgical Society's Library will be closed during the whole of the month of August for necessary cleaning.

Dr. H. E. W. Hoffmeister has been appointed by Princess Henry of Battenberg Surgeon-in-Ordinary to Her Royal Highness.

HOME FOR PATIENTS SUFFERING FROM LUPUS.—An interesting work is being done in the Mile End-road by Mrs. Freeman. This lady has rented the upper part of a house and has a set of comfortable rooms for poor patients who are suffering from lupus and who are undergoing the Finsen light treatment at the London Hospital. Mrs. Freeman is to be commended for the earnest way in which she has undertaken this responsibility and we hope that friends will be forthcoming to enable her to carry on the work that she has so well begun. At the low rate of charge that is made for board and lodging it is impossible to cover expenses, therefore Mrs. Freeman appeals to the generosity of the public.

DONATIONS AND BEQUESTS.—The executors of the late Mr. Richard Bishop have allotted £500 to the Chelsea Hospital for Women, £300 to the building fund of the North-Eastern Hospital for Children, Hackney, and £300 to the Hampstead General Hospital.—Under the will of Mr. A. A. Haclin the sum of £800 is bequeathed to each of the following hospitals: King's College Hospital, Great Northern Central Hospital, Middlesex Hospital, University College Hospital, Royal Free Hospital, French Hospital and Dispensary, London Temperance Hospital, Central London Ophthalmic Hospital, Westminster Hospital, St. Mary's Hospital, Hospital for Consumption, Brompton, Charing Cross Hospital, London Hospital, Cancer Hospital, Brompton, St. Thomas's Hospital, and St. Bartholomew's Hospital.—Mr. Charles Lucena of Westwick, Easthampstead, has by his will bequeathed £200 to the Royal Berkshire Hospital and £200 to the Home for the Dying at Clapham.—By the will of Mr. M. W. Hughes of Dublin a sum of £500 has been left to each of the following hospitals: St. Vincent's Hospital, Dublin; Mater Misericordiæ Hospital, Dublin; Jervis-street Hospital, Dublin; St. Michael's Hospital, Kingstown; City of Dublin Hospital; Meath Hospital, Dublin; Sir Patrick Dun's Hospital, Dublin; the Fever Hospital and House of Recovery, Dublin; Dr. Steevens' Hospital, Dublin; and the Mercers' Hospital, Dublin.

THE

CONGRESS OF THE ROYAL INSTITUTE OF PUBLIC HEALTH.

(FROM A SPECIAL CORRESPONDENT.)

(Concluded from p. 256.)

THE proceedings of this Congress, which commenced on July 15th, came to a close on July 21st.

III.—SECTION OF BACTERIOLOGY AND COMPARATIVE PATHOLOGY.

An important discussion upon

A Uniform Scheme of Examination to be adopted in the Bacterioscopic Analysis of Water

was initiated by Dr. SAVAGE (medical officer of health of Colchester) who dealt with the subject under four headings—viz., (1) the collection and transmission of the samples; (2) the data to be ascertained; (3) the processes and procedures of the examination; and (4) the interpretation of the results. With regard to (1) he detailed the precautions usually adopted, but stated that he was by no means sure that ice-packing preserved the bacterial content unaltered. As regards (2) he suggested (*a*) number of aerobic organisms per cubic centimetre developing at low temperature—e.g., room temperature to 22° C.; (*b*) number of aerobic organisms per cubic centimetre developing at 37° C.; (*c*) investigation as to the presence of certain organisms especially liable to be associated with sewage or fæcal contamination, such as bacillus coli communis, bacillus enteritidis sporogenes, streptococci, and proteus organisms; and (*d*) examination for bacillus typhosus and spirillum choleræ. As regards (3) he thought that some uniformity might be come to concerning the temperature of incubation, date of counting the colonies, and reaction of the culture medium, but he did not consider they were yet in a position to suggest a standard method for the qualitative examination for bacillus coli and for bacillus enteritidis sporogenes; it had yet to be determined whether cultural characters alone were sufficient or whether the inoculation test in addition was necessary. He was averse to setting up arbitrary standards as the kind of water under examination was of importance, but with uniformity of methods it was possible to have very satisfactory standards for the different classes of water. In conclusion, he advocated the formation of a committee to consider the question.

Dr. G. LESLIE EASTES (London) thought that there was urgent need for the standardisation of methods and that the time was ripe for some agreement to be come to among bacteriologists. He pointed out the differences obtained by using plain gelatin and nutrient gelatin as a plating medium and then discussed the methods for the isolation of bacillus coli, of which he considered Pakes's glucose formate broth the most delicate and satisfactory.

Mr. F. J. TANNER (Bournemouth) considered that some uniformity in method and procedure was urgently required and that the necessity of periodical and futility of casual examinations could not be too strongly impressed upon those responsible for our water-supplies.

Professor R. T. HEWLETT (London) pointed out that the chemists had arrived at a more or less uniform procedure and half a dozen chemists examining the same water would probably all adopt the same method and would obtain the same figures. He thought that some scheme might be formulated to obtain uniformity among bacteriologists and advocated the formation of a committee to consider the question. For the bacillus enteritidis sporogenes he did not think inoculation desirable as there were non-virulent varieties.

Professor R. W. BOYCE (Liverpool) thought that the chemists had stood still because they were content with their methods. He was doubtful of the value of bacillus enteritidis sporogenes or other sporing forms in the bacteriological examination of water.

Dr. GLYNN (Liverpool) agreed with Professor Hewlett that there were non-virulent forms of the bacillus enteritidis sporogenes.

Dr. EASTES then moved—

That a committee of bacteriologists be appointed to consider the question and report to the next Congress.

This was carried unanimously.

The Nature of the so-called Pseudo-Diphtheria (Hofmann) Bacillus and its Significance (if any) in the Bacteriological Examination for Diphtheria.

A discussion on this subject was opened by Dr. LOUIS COBBETT (Cambridge) who concluded that the bacillus of Hofmann differed fundamentally from the diphtheria bacillus in producing no acid out of glucose. It was very widely distributed and was no commoner in "contacts" with diphtheria than in persons from healthy districts. Even when the bacillus was taken from convalescent patients it never had any virulence for the guinea-pig. It was not agglutinated by a serum which agglutinated the diphtheria bacillus and the non-virulent diphtheria bacillus. It formed neither toxins nor toxoids. The published instances were too few to prove the conversion of Hofmann's bacillus into the diphtheria bacillus and *vice versâ*. There were no sufficient reasons for concluding that the bacillus of Hofmann had any relation whatever to diphtheria or to the diphtheria bacillus. The diphtheria bacillus in all probability, when attenuated, became converted, not into Hofmann's bacillus, but into what was now generally called the non-virulent diphtheria bacillus, retaining its power of forming acids out of suitable sugars.

Mr. TANNER, after detailing the characters of the Hofmann bacillus, said that he had been impressed by the frequency with which this organism was met with in throat swabs, how it only might be found at first, was then succeeded by the Klebs-Löffler bacillus and this again was replaced by the Hofmann bacillus during convalescence. He had met with many cases with throat symptoms which had yielded the Hofmann bacillus; should such cases be considered infectious and should they be isolated? In Bournemouth the practice was to regard such cases as infectious *pro tem.* and to examine them repeatedly; if they were sent to the infectious hospital they were placed in isolation wards and not in the diphtheria ward unless Klebs-Löffler bacilli were found. As the result of his experience he could not help thinking that the Klebs-Löffler and Hofmann bacilli were in some way related and he gave several histories of cases in support of this view.

Mr. J. C. HEAVEN (deputy medical officer of health of Bristol) as the result of several thousand examinations considered that the Hofmann bacillus could cause disease which might resemble diphtheria closely, even to fatality. He had had 25 children yielding only the Hofmann bacillus treated in the ordinary wards with cases of diphtheria and not one had contracted diphtheria. In conclusion, he submitted that "Hofmann and pseudo-contacts" should be treated, should be placed under a reasonable amount of restraint, and certainly should be excluded from school attendance.

Mr. E. C. BOUSFIELD (Camberwell) said that it was his invariable practice to return as diphtheritic all cases in which a "diphtheroid" bacillus was found, and no proof had yet been offered in his opinion that the Hofmann bacillus was not a variety of the Klebs-Löffler bacillus, and he pointed to the great variation occurring with other organisms, e.g., bacillus coli and bacillus enteritidis (Gärtner).

Professor STANLEY KENT (Bristol) gave the histories of two cases which had been under his observation. One had a typical attack of diphtheria which ran a mild course, was benefited by antitoxin, and was followed by palatal paralysis. Repeated examinations of the throat and nose showed Hofmann bacilli only in pure culture; the Klebs-Löffler bacillus was never found. The other case had a severe attack of diphtheria which ended fatally. Again, the Hofmann bacillus only, and not the Klebs-Löffler bacillus, was found on repeated examinations. He said that he had little doubt that the Hofmann bacillus was capable of producing symptoms of diphtheria and of spreading the disease.

Dr. BUCHANAN (Glasgow) was surprised that Dr. Cobbett absolutely distinguished between the two bacilli, the Hofmann and the Klebs-Löffler; in his opinion there were a series of transitional forms connecting the two. During the course of the illness there was a universal tendency to a change of type towards the Hofmann bacillus. He did not think that it would be possible to exclude all children with Hofmann bacilli from school, but they should certainly be excluded if they complained of throat symptoms.

Dr. W. A. BOND (London) and Dr. LOW (London) insisted upon the early use of antitoxin if there were any exudation.

Professor HEWLETT said that he was one of those who held that the Hofmann bacillus was a modified Klebs-Löffler bacillus, but he was quite ready to change his opinion should clear proof be furnished that this view was wrong. This he did not think had yet been done. He then drew attention

to several points of similarity between the two organisms and said that his view of their relationship was that the Hofmann bacillus was far removed from virulence—i.e., very non-virulent, if such an expression could be used.

Some Observations upon the Bacteria of the Water of Public Swimming Baths.

Dr. GLYNN and Dr. MATTHEWS (Liverpool) communicated a paper upon this subject of important and public interest. They found that the first-class baths contained less bacteria than the second-class and that the number of bacteria rose as bathing went on throughout the day. They estimated that a first-class bather introduced 4,000,000,000 and a second-class bather 6,000,000,000 microbes into the water. Fully-dressed persons walking along the edge of the bath were also responsible for a serious bacterial pollution through the dirt on their boots.

Professor MOORE (Liverpool) read a paper upon

A Chemical Theory of the Propagation and Development of Certain Infectious Diseases,

in which he suggested that in certain instances where no microbes had been detected a chemical agent similar to an enzyme might be the cause. To account for the reproduction of this "catalyser" he pointed out an analogy in certain chemical reactions and suggested that not only did this catalyser cause the symptoms of the disease but at the same time induced certain cells to produce more of itself, so that fresh infection of other individuals became possible.

The theory was criticised by Sir MICHAEL FOSTER (Cambridge), Dr. COPEMAN, Dr. A. S. F. GRÜNBAUM (Liverpool), Professor HEWLETT, and Dr. NASH.

The Germicidal Action of Alum upon the Typhoid Bacillus.

Dr. H. S. WILLSON (London) communicated some experiments which he had made in this direction. In distilled water 1 per cent. of alum had little or no effect. In ordinary water or turbid river water alum had a remarkable clarifying effect and produced an enormous diminution in the number of water bacteria in an amount of 35 grains to the gallon. Upon typhoid bacilli being added to the water, however, the alum again had little or no effect.

Dr. DEAN and Dr. TODD (London) communicated a paper upon

The Susceptibility of the Pig to Human Tuberculosis.

In the six experiments which they had made the animals were all infected with the human bacillus, the infection being at least as severe as that described by Professor Koch as the result of the inoculation of the pig with the bovine bacillus.

Dr. H. E. ANNETT (Liverpool) read a paper upon

Tuberculous Expectoration in Public Thoroughfares,

in which he drew attention to the dissemination of tubercle bacilli by the filthy habit of spitting. He had found that tuberculous sputum exposed to sunlight remained virulent up to 24 hours but not for 48 hours. Of 105 specimens of expectoration collected from the streets five contained virulent tubercle bacilli. The amount of spitting that went on in the streets was noteworthy. During a slow walk of one hour through frequented streets in Liverpool and reckoning only recent, thick, muco-purulent ones, no less than 183 expectorations were counted.

Infection of Bovines with Human Tuberculosis.

Professor YOUNG, F.R.C.V.S. (Aberdeen), described some experiments performed by Professor Hamilton and himself upon 20 calves which left no doubt that the human tubercle bacillus could be inoculated upon bovines. He had no doubt that bovine tuberculosis could be transmitted to man and that the milk was the most potent factor in this transmission.

Milk-supply of Large Towns.

Mr. LLOYD, M.R.C.V.S. (Sheffield), drew attention to the objectionable manner in which the cows and milk were kept and treated, to the sources of contamination, to the effects of food and the operation of milking upon the quality of the milk, to adulteration, and to the measures to be taken to protect the milk-supply. The two foregoing papers were followed by an interesting discussion.

The Influence of Surroundings and Locality upon the Recurrence of Malignant Disease.

Mr. D'ARCY POWER (London) invited opinions upon this question and asked whether, after an operation for malignant disease, it was advisable or inadvisable to send a patient back to his old house and former surroundings. Some striking instances were quoted in which recurrence took place when patients were sent back to their old surroundings and did not do so when a complete change in former habits, &c., was made. The paper was published in full in THE LANCET of July 25th, p. 221.

Papers were also read by the following: Dr. A. C. COLES (Bournemouth) upon the Resistance of Acid-fast Bacilli to Decolourising Agents; Dr. R. LORD (London) upon Acetozone, a New Germicide; Dr. J. W. W. STEPHENS (Liverpool) upon Staining Bacterial Flagella with Silver; Mr. K. WELLDON GOADBY (London) upon a Card Index for Bacteriological Work; Dr. COPEMAN upon an Outbreak of Cow-pox; and Mr. STAFFORD JACKSON upon Diseases of Animals Communicable to Man.

IV.—SECTION OF TROPICAL SANITATION.

Dr. A. NELL read a paper on

Hygiene in West African Mining Camps.

He emphasized those elementary methods of promoting individual and general hygiene so well understood in India and Ceylon but which up to the present had been completely neglected in Africa. He pointed out how apparently trifling details made the difference between a healthy and an unhealthy station.

The Prevention of Malaria on Shipboard.

Mr. EVANS of the Elder-Dempster Line said that so long as the taking of quinine was a voluntary matter, so long would malaria remain on shipboard. It would be wise to have a Board of Trade regulation to insist upon a regular "quinine parade." Officers and men should be educated as to the value of quinine and as to the mosquito theory. It would be difficult to exclude mosquitoes altogether from ships, hence the value of quinine.

Dr. C. CHRISTY (Liverpool) discussed the measures to be directed against the mosquito and the value of the system of the segregation of Europeans and exclusion of natives. The last he described as being the only measure which afforded the traveller any real hope of safety.

Other communications were made by Dr. MCCULLOCH upon Proper Medical Supervision upon Indian Railways and by Mr. J. CANTLIE (London) upon the Dissemination of Plague by Animal Food.

V.—SECTION OF MUNICIPAL HYGIENE AND SANITARY LEGISLATION.

Sanatoriums for Tuberculosis.

A discussion upon the Provision of Sanatoriums for Consumptives was opened by Professor W. R. SMITH (London) who saw great difficulty in compulsory notification, the isolation of consumptives, and the provision of adequate accommodation for tuberculous patients.

Mr. MAXWELL LAWFORD (London) read a paper upon

The Application of Pneumatic Power to Works of Municipal Hygiene,

and discussed the growing tendency to make use of pneumatic power in connexion with water-supply and sewerage.

Mr. MORESBY WHITE discussed

Recent Sanitary Legislation,

and dealt with the necessity for the simplification of legislation and of the various legal powers of sanitary authorities. "Open Spaces" and "Garden Cities" were the titles of other communications.

VI.—ENGINEERING SECTION.

Professor HELE SHAW (Liverpool) presided over this section and in an interesting address dealt with the subject of road traction and with the importance of increasing the speed of road vehicles.

Professor BOYCE read a short paper on

Sewage Effluents and the Construction of Filter-beds.

He advocated the bacteriological treatment of sewage and explained the system adopted by the Liverpool corporation. In the course of subsequent discussion the system commended by Professor Boyce and that of precipitation were considered.

VII.—SECTION OF CHILD STUDY AND SCHOOL HEALTH.

Professor C. S. SHERRINGTON (Liverpool) presided over this section.

Child Study.

Mr. H. HOLMAN, H.M.I., of Bury opened a short discussion on the subject of Child Study: its Scope and Method in Education. He contended that the majority of parents made a great and cardinal mistake in treating a child as a man in miniature. A child was only so inasmuch as he went through stages of progress in new knowledge which were repeated in adults who attacked any new form of study. True child study needed very high qualifications and from a medical point of view an infant needed vastly different treatment from a grown person. He urged upon all school teachers the great necessity of attaining a definite knowledge of the science concerning the human being and of making themselves familiar with both the physiology and psychology of child life. Hitherto great danger had arisen through the medical man dictating to the educationist and the educationist in turn dictating to the medical man.

A brisk discussion arose on the question of the introduction of military drill into schools which, on physical grounds, was strongly advocated by Captain J. C. ROBERTSON who urged that systematic physical training should be an integral part of education in all schools under public authority and maintained that of the various methods of physical culture military drill had been proved by experience to be the simplest and the best.

VIII.—SECTION OF PORT SANITARY ADMINISTRATION.

Alderman D. CLARKE (Liverpool) in his presidential address referred to the work done by the port sanitary authority of Liverpool, especially in regard to the checking and preventing of the introduction of sea-borne infectious disease.

Inspection of Food at the Port of London.

Dr. HERBERT WILLIAMS (London) read a paper on this subject. Looking at the large proportion of food which was rapidly perishable, careful inspection, he said, was of first importance and there should be ample powers for seizure, condemnation, and destruction.

Dr. PRINGLE followed with a Plea for Community of Action among Port Sanitary Authorities, Alderman S. COHEN (Hull) with a paper on the Port Sanitary Authority and its Relation to Emigrants, and Mr. R. SHERITON HOLMES (River Tyne) on the Question of the Payment of Delegates' Expenses.

IX.—LADIES COMMITTEE AND SECTION OF DOMESTIC SANITATION.

Elementary School Hygiene, by Mrs. BULNOIS; Anti-Faddism, by Miss A. H. A. BOYLE, M.D. (Brighton); Sterilised Milk, by Miss HEALD; and the Care and Feeding of Infants, by Miss KATE MARION HUNTER, L.S.A. (London), were some of the subjects discussed in this section.

SANITATION IN WEST AFRICA.

At the termination of the proceedings of the Congress of the Royal Institute of Public Health at Liverpool on July 21st an important conference of West African merchants and others was held at the Exchange Station Hotel. The conference was preceded by a luncheon given by Sir Alfred Jones, K.C.M.G., who, however, was unable to preside, and in his absence the chair was occupied by Mr. H. Cotterell, chairman of the African Association. After explanatory speeches by the chairman, Major Ronald Ross, and Mr. John Holt, the following motions were agreed to unanimously:—

1. That a fully qualified medical officer of health with an adequate sanitary staff should be appointed to each of the principal West African towns whose sole duty it shall be to attend to sanitary matters in those towns.

2. That there should also be appointed for all the West African colonies an expert sanitary commissioner, on the Indian model of sanitary organisation, the duties of the said commissioner being as follows: (*a*) To spend at least half the year in visiting as many parts of the said colonies as possible for the purpose of inspecting and reporting upon the state and progress of sanitation in them, such report being made direct to the Colonial Office as well as to the Government of each colony; (*b*) to supervise the sanitary statistics and to advise the Colonial Office regarding sanitary measures of importance.

3. That the Colonial Office be asked to publish annually a sanitary report containing reliable statistics of the sickness and mortality, especially among Europeans, in the said colonies, and also giving details of the sanitary work done in them, such report to be of the nature of the annual report published by the Sanitary Commissioner of the Government of India, and that a copy of these resolutions be sent to Mr. Chamberlain.

Looking Back.

FROM

THE LANCET, *SATURDAY*, JULY 30, 1828.

THE ancient physicians, it would appear from CELSUS,* knew but little of operative midwifery, and were consulted for the most part, only, when the loss of the child was certain, and the recovery of the parent doubtful; and as such cases probably occurred but seldom, the imperfection of their knowledge is not to be wondered at, since they necessarily wanted experience, and the *tact* acquired by practice, by which alone the art could have been well understood, successfully practised, or materially improved. During the dark ages which succeeded to the downfall of the Roman empire but little was done towards the improvement of midwifery; and until the middle of the seventeenth century, when male practitioners of the obstetric art first came into vogue in ordinary cases, no decided addition had probably been made to the knowledge of the ancients—"It is pretty generally known," says Dr. Davis, "that the Duchess de la Viliere, a favourite mistress of Louis the Fourteenth of France, was the first female who was induced to place herself under the exclusive obstetric care of a professor of surgery, independent of any anticipated necessity for a surgical operation. That event took place in December, 1663; and Julian Clement, the fortunate attendant upon the case, was soon after appointed to the new and lucrative office of Midwifer to the Princesses of France." Clement advanced the practice of midwifery, but introduced no improvements into the instrumental part of the art; nor "were any accessions of this kind made to it for near half a century after his time." Improvements, however, beginning to multiply, a prodigious clamour was raised by the female practitioners, who accused the surgeons (and probably with justice) of an undue attachment to the use of instruments; indeed the clamour to the present day has not wholly subsided. The forceps and vectis, being employed unnecessarily, were afterwards disregarded where they were indicated, like some of the contrivances and remedies of our own day, which, being overrated at first, are sooner or later entirely abandoned. No doubt labour is a natural and not a morbid process—that the resources of unassisted nature are generally sufficient, and that the interference of art (in ninety-nine cases of a hundred) is at best but auxiliary and trifling; still as anomalous cases, and cases of difficulty and danger, may and do occur, it is certainly incumbent on those who may practise this branch of the profession, to capacitate themselves for acting with promptitude in *every* case to which they may be called, without trusting to the chances (which undoubtedly are much in their favour) of having little to do. Thus, although a fatal issue may not always be inevitable, yet it will seldom occur, and if it do, a consciousness of having done the utmost for the patient will be the best and only solid satisfaction the practitioner can have.[1]

* Lib. vii. Cap. xxix. This author speaks only "of the method of extracting a *dead* fœtus," and apparently knew no instrument but the crochet. HIPPOCRATES and GALEN were equally uninformed.

[1] Excerpt from Review of *Elements of Operative Midwifery* by DAVID D. DAVIS, M.D., Member of the Royal Colleges of Physicians of London and Edinburgh and Lecturer on Midwifery. London, 1825. Hurst, Robinson, and Co. and S. Highley.

MEDICINE AND THE LAW.

Anthrax and Accident.

IN a case under the Workmen's Compensation Act at Kidderminster the county court judge has held that anthrax infection is an "accident" within the meaning of the Act and that the widow of a workman who died from anthrax acquired when sorting Persian wool for his employers is consequently entitled to compensation at their hands. The matter is of considerable interest to workmen and employers and probably the Court of Appeal will be called upon for a final decision upon it. The section of the Act gives to the workman compensation for "personal injury by accident

arising out of, and in the course of, his employment." It has been held that whether the injury is due to an "accident" or not is a question of mixed fact and law and consequently the Court of Appeal will review the finding of a county court judge on the subject, although it may not be willing to disturb it. In a recorded case an "accident" has been spoken of as something "fortuitous or unforeseen," and it has also been said that "in its ordinary sense the word accident necessarily involves casualty, violence, or *vis major*." In the case mentioned it was decided that a woman who sustained internal injury through lifting a succession of heavy boxes was not injured by an "accident." The county court judge at Kidderminster held that some force caused the anthrax bacilli from the wool to float in the air and to impinge on the deceased and that this circumstance constituted the infection an "accident."

Houses overlooking Open Spaces.

Under the Metropolitan Open Spaces Acts and under the Disused Burial Grounds Act areas of considerable extent have been thrown open for the public benefit in many parts of the metropolis. They are of use as recreation grounds, where the neighbouring inhabitants and their children can obtain a little fresh air and sometimes look upon green grass and trees, while the houses adjoining and overlooking them enjoy the obvious advantage derivable from facing an open space. The Paddington borough council, however, anxious lest some houses built so as to overlook a large disused graveyard should acquire a prescriptive right to enjoy light and air uninterrupted, erected a hoarding upon the land under its control and an action was brought by those interested in the houses in order to test the council's right to do this. Mr. Justice Buckley's decision was in the council's favour, but the Court of Appeal, consisting of Lord Justice Vaughan Williams, Lord Justice Romer, and Lord Justice Cozens-Hardy, has now taken a different view and the hoarding will have to be removed. As far as we understand, the open spaces made public where there have been burial grounds are intended to remain open spaces for ever; no one may build upon them except where a church has to be enlarged and the borough of Paddington having no power in any case to build on the land in question will not be in any worse position owing to the decision of the Appeal Court. The benefit derivable by a locality from an open space is not confined to the pleasure and recreation of those who resort to it. The houses immediately adjoining it gain considerably and others near it do so to a less degree. It would diminish the utility of such open spaces considerably if unsightly erections were permitted upon them in order to guard rights which no one would ever wish to see exercised. The appeal in the case referred to (Boyce *v.* the Paddington Borough Council, July 25th, 1903) involved not only legal questions of some intricacy but a matter of considerable public importance and no one should regret the decision at which the court arrived.

THE NEW BUILDINGS OF CAMBERWELL INFIRMARY.

THE board of guardians of the parish of St. Giles, Camberwell, S.E., after three years' building operations and at a gross cost of close upon £200,000, opened on July 24th very extensive new infirmary buildings for South London. The old and comparatively small building, which was erected in 1873, has been altered and modernised so as to form part of the institution, which the board wish to be known as Camberwell Infirmary and which, although technically a parish infirmary, must from its position and extent be regarded as really a general hospital, capable of dealing with a large number of accident and acute cases of all kinds. The institution is in Brunswick-square—a well-wooded open space recently acquired for the public, quite near to Camberwell Green and the main highway therefrom to Peckham and New Cross, but sufficiently far away to be out of the noise of the street traffic. It consists of 21 buildings standing on a site of several acres, practically surrounded by roads, all the buildings being connected by glass-covered ways and subways. It will provide accommodation for 800 patients, have a resident staff of five medical men, and officials, nurses, and servants to the number of about 160, with Mr. W. J. C. Keats at their head as medical superintendent. The various erections are built of fire-resisting material and special provision is made for escape in case of an outbreak of fire. The institution contains a fully-equipped operating theatre with recovery-room attached and an electric treatment-room with all modern appliances—"x" rays, galvanic and faradic electrical baths, and all the usual appliances for dealing with diseases of the nervous system. On each of the four floors of three pavilions there is a ward of 24 beds, with windows on three sides, and other wards of six, four, and two beds respectively—so arranged, of course, as to afford opportunity for classification. On every floor a balcony the whole length of the large ward faces west and is sheltered from all cold and side winds. The large ward of the top floor has been specially designed for consumptive patients and practically the whole of the inclosures on three sides consist of opening windows for open-air treatment, there being above a flat roof on which patients may spend all the day with something of interest to see in the panorama stretching for miles across London. This arrangement for consumptive patients is new in the metropolis and so far as is known not yet introduced in any of the general hospitals of the large towns throughout the country. Special attention has been paid to the provision and furnishing of a children's pavilion. The whole institution is electrically lighted; it has electric lifts of a special labour-saving type which are capable of hoisting and lowering beds of full length; it has laundry motors, electric ventilation, and a heating system of a kind believed to exist in only one other institution in London—open fires being allowed for in the sitting-rooms only. The administrative offices are in the centre and so is the nurses' home, in which there are several large rooms for dining, writing, recreation, &c., and to which a pleasant garden is attached.

At the formal opening the architect—Mr. EDWIN T. HALL, F.R.I.B.A., F.S.I.—handed to Mr. Alfred Foster, chairman of the board of guardians, who presided, a key with which to unlock the main door of the administrative building of, he said, this new temple of Hygeia. Mr. FOSTER, in declaring the building open, mentioned that the guardians would get from the Local Government Board £53 000 as its share of the money realised by the sale of what were known as the Sutton Schools. The population of the parish, he stated, had risen from 111,302 in 1873, to 259,339 in 1903, the indoor adults under its charge from 506 to 2167, and the children from 421 to 1028. Mr. WILLIAM T. PARTRIDGE, chairman of the infirmary committee during the last nine or ten years, congratulated the large number of Camberwell ratepayers who had come to take part in the opening ceremony on having secured for their great parish an infirmary capable of doing the work that was to be done. Hitherto they had been much handicapped, but that state of matters was now at an end, and as they were such a long distance from the general hospitals of South London—St. Thomas's and Guy's—they would be able with their accommodation to receive a greater number of acute medical and surgical cases than was usually undertaken by metropolitan infirmaries. 14 years ago they had not a single trained nurse, but of the 64 employed at present—a number to be gradually raised to 116—there was not one who had not passed through the training school. Dr. J. T. MACNAMARA, M.P. for North Camberwell, felicitated everyone concerned on the completion of the buildings. He did not think the money they cost could be better spent, but he thought that the Local Government Board ought to give a very generous contribution towards the cost for the reason that so many people from other districts of London and from the country came into the parish and while getting the advantages somehow escaped the burdens which the more permanent residents were called upon to bear. To the poor people of the district he believed that this large extension of the Camberwell Infirmary must prove an unspeakable boon.

On the motion of the Mayor of Camberwell (Mr. GODDARD CLARKE, J.P., L.C.C.) a vote of thanks was accorded to the chairman, and then Mr. Hall and the stewards led the visitors, in parties of 50, to inspect the buildings.

ASYLUM REPORTS.

County and City of Worcester Asylum (Annual Report for 1902).—The average number of patients resident during the year was 1189, comprising 524 males and 665 females. The admissions during the year amounted to 266—viz., 114 males and 152 females. Of these 228 were first admissions. Mr.

G. M. P. Braine-Hartnell, the medical superintendent, states in his report that the ratio of insane patients per 1000 of population in the geographical county of Worcester was 2·87 in 1901, as compared with a ratio of 1·88 in the year 1861. Further inquiries made by Mr. Braine-Hartnell show "that the insane community of Worcestershire during the 40 years (1861–1901) has increased by 481 *beyond or in excess* of the number we should expect, having regard to the natural increase of population." Of the patients admitted during the year only 23 were in good bodily condition, the rest (243 in number) being in indifferent or bad health. The number of patients discharged as recovered during the year amounted to 96—viz., 39 males and 57 females, or 8·1 per cent. of the average number resident. The deaths during the year amounted to 116, or 9·7 per cent. as calculated on the same basis. Of the deaths four were due to renal disease, six to epilepsy, nine each to cardiac disease and pneumonia, 11 to general paralysis of the insane, 16 to colitis, 19 each to senile decay and general paralysis, and the rest to other causes. Post-mortem examinations were made in 94 cases. A married female patient was confined a fortnight after admission. "She still remains," adds Mr. Braine-Hartnell, "a patient." Four patients escaped during the year and all but one were recaptured within a short time. A few cases of measles and typhoid fever occurred in the asylum, affecting both patients and attendants. "Influenza has been rife among the staff and some of the patients have suffered." An outbreak of colitis affected 25 male and 46 female patients. Owing to the prevalence of small-pox in the county the patients and staff were vaccinated. The results were good, as small-pox did not break out in the institution. The average weekly cost of maintenance per patient has been raised from 7*s.* 7*d.* to 8*s.* 2*d.* The Commissioners in Lunacy state in their report that the asylum is overcrowded and that further accommodation is needed, that the wards were bright, cheerful, and comfortable, that the dormitories and bedding were in excellent condition, and that the medical case-books were very well kept. The committee of management states in its report that owing to overcrowding of the asylum it has made contracts with the authorities of Derby and Northampton county asylums to board out 45 patients.

Royal Edinburgh Asylum for the Insane (*Annual Report for 1902*).—The average number of patients resident during the year was 946, comprising 471 males and 475 females. The admissions during the year amounted to 423—viz., 189 males and 234 females. Of these, 329 were first admissions. Dr. T. S. Clouston, the medical superintendent, states in his report that in no less than 119 cases, or 28 per cent. of the admissions, the mental breakdown was attributable to alcoholic intemperance. "This is the highest number that we have ever had sent here as the result of alcoholic excess. It is most sad and discouraging that this preventable cause of the most terrible of all human diseases should thus contrive to increase. It is a veritable plague-spot in our social life." The mean age of those admitted steadily increases, having gone up from 40 years in 1901 to 43·3 years in 1902. No fewer than 56 of the admissions, or 13 per cent., were cases of general paralysis. "This is, with the exception of last year, the largest number of [cases of] this disease we have ever had sent to us, and confirms my remarks in last year's report as to the distinct increase of this deadly disease in this district at least. From having stood low, in regard to this disease 30 years ago, our admission rate is now the highest in Scotland. It, too, like alcoholic insanity must be regarded as a largely preventable scourge of humanity." In addition to these 56 cases of general paralysis, there were 80 patients who suffered from advanced senility and gross brain disease, thus showing that one-third of the admissions were incurable in character from the beginning. The number of patients discharged as recovered during the year amounted to 134, or 14·1 per cent. of the average number resident. The deaths during the year amounted to 138, or 14·5 per cent. as calculated on the same basis. Of the deaths three were due to epilepsy, nine to pneumonia, 16 to pulmonary tuberculosis, 17 to cardiac disease, 19 to senile decay, 42 to general paralysis of the insane, and the rest to other causes. Post-mortem examinations were made in 103 cases. "The most alarming event of the year was an outbreak of asylum dysentery or colitis. ..... We had 27 female cases. ..... I may say that of the whole 27 cases only three could be said to be in anything like fair bodily health and condition before they were attacked by the disease. Seven of the 27 patients died. ..... The epidemic was treated from the beginning by the strictest isolation and disinfection." One possible means of the propagation of the disease was the cats of the ward, two of which were found to be suffering from it. The cats in the establishment were killed on this discovery being made. "My general conclusions in regard to this unfortunate epidemic," adds Dr. Clouston, "are that it was predisposed to by the overcrowded state of the wards, particularly our hospital, the patients being weak and specially susceptible to any disease, that the actual disease was introduced somehow from defective sanitary arrangements, and that, to a certain extent, it was propagated in the house by direct infection." The Commissioners in Lunacy state in their report that "the proportion of deaths [from general paralysis] greatly exceeds the average of the other Scottish asylums and judging from the number of cases suffering from the disease in the wards of the asylum, there is reason to believe that this deadly affection has attained an unprecedented prevalence in the city of Edinburgh." They also state that the condition of the patients was tidy and indicated careful attention on the part of the attendants and nurses, that the dietary was varied and sufficient, that the wards were scrupulously clean, that the sitting-rooms and bedrooms were brightly decorated and well furnished, that the patients had ample opportunities for exercise and recreation, and that the medical case-books and records were found to be carefully and regularly kept. The committee of management states in its report that pending the erection of the Bangour Asylum the district board has arranged to erect temporary accommodation for 150 patients which will, it is expected, be ready for their reception in the course of a few months and will to that extent relieve the overcrowding at the asylum. The cost of maintenance of pauper patients per head has fallen from £33 2*s.* 4*d.* in 1901 to £31 15*s.* 8½*d.* in 1902, being a decrease of £1 6*s.* 7½*d.*

Joint Counties Asylum, Carmarthen (*Annual Report for 1902.*)—The average number of patients resident during the year was 646, comprising 330 males and 316 females. The admissions during the year amounted to 122—viz., 66 males and 56 females. Of these 109 were first admissions. Dr. E. Goodall, the medical superintendent, states in his report that the average age on admission was 40 years for males and 39 years for females. A hereditary tendency to insanity was traceable in 42 per cent. of the admissions, alcoholic intemperance was met with in 15·2 per cent., and senile decay was the cause of insanity in 14 per cent. Of the admissions 37 were more or less actively suicidal and 26 were subject to dangerous impulses. The number of patients discharged as recovered during the year amounted to 32—viz., 20 males and 12 females, or 4·9 per cent. of the average number resident. The deaths during the year amounted to 63—viz., 33 males and 30 females, or 9·8 per cent. as calculated on the same basis. Of the deaths three each were due to epilepsy and senile decay, four to renal disease, seven each to broncho-pneumonia and general paralysis, eight to cardiac disease, 17 to pulmonary and other forms of tuberculosis, and the rest to other causes. Post-mortem examinations were held in 56 out of the 63 deaths. The general health of the institution has been satisfactory throughout the year apart from the undue proportion of cases of pulmonary tuberculosis. "The segregation of cases of consumption is highly desirable, otherwise they act as foci of contagion. There is at present no suitable building available here" for such cases. The average weekly cost of maintenance is between 8*s.* 5*d.* and 8*s.* 9*d.* per patient. "In addition to the more usual means," says Dr. Goodall, "we continue to use the electric bath [in the treatment of patients]. It appears to be the best method of applying the electric current for general purposes and shows itself to be a valuable aid to treatment in certain cases." The Commissioners in Lunacy state in their report that the condition of the patients was satisfactory in matters of dress and personal tidiness, that their behaviour was orderly, and that the medical case-books were very well kept. They recommend that an improved should dietary be adopted for the more poorly nourished patients. They state that the wards and dormitories generally were in a satisfactory condition, that the former were bright and cheerful, and that the latter were sweet and clean. The committee of management states in its report that the new hospital for infectious diseases is being built, but that progress is necessarily slow as asylum labour only is used. The committee has under consideration the adoption of a scheme for pensioning servants who have been in the asylum service for long periods and who are through age incapacitated from fulfilling their duties.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In 76 of the largest English towns 8687 births and 3874 deaths were registered during the week ending July 25th. The annual rate of mortality in these towns, which had been 14·4, 13·7, and 13·5 per 1000 in the three preceding weeks, further declined to 13·4 per 1000 last week. In London the death-rate was 12·7 per 1000, while it averaged 13·7 in the 75 other large towns. The lowest death-rates in these towns were 5·7 in Tottenham, 6·3 in Reading and in Handsworth, 6·9 in Walthamstow, 7·0 in Northampton, 7·1 in East Ham, 7·2 in York, and 7·3 in Hornsey; the highest rates were 18·0 in Liverpool, 18·2 in Ipswich, 18·9 in Warrington and in Burnley, 19·1 in Stockport and in St. Helens, 19·2 in Bolton, and 20·6 in Bury. The 3874 deaths in these towns last week included 531 which were referred to the principal infectious diseases, against 436, 441, and 473 in the three preceding weeks; of these 531 deaths 225 resulted from diarrhœa, 111 from measles, 74 from whooping-cough, 49 from diphtheria, 40 from scarlet fever, 27 from "fever" (principally enteric), and five from small-pox. No death from any of these diseases was registered last week in Hornsey, Tottenham, Hastings, Bournemouth, Southampton, Reading, Devonport, Burton-on-Trent, Handsworth, King's Norton, Derby, or Stockton-on-Tees; the highest death-rates from the principal infectious diseases were recorded in Stockport, Birkenhead, Bootle, Warrington, Burnley, Leeds, Sheffield, Tynemouth, and Rhondda. The greatest proportional mortality from measles occurred in Ipswich, Aston Manor, Stockport, and Sheffield; from whooping-cough in Willesden; from "fever" in Bootle; and from diarrhœa in Birkenhead, Bootle, Warrington, Bury, Gateshead, and Tynemouth. The mortality from scarlet fever and from diphtheria showed no marked excess in any of the large towns. Small-pox caused one death in Smethwick, one in Liverpool, one in Leeds, one in Hull, and one in Newcastle-on-Tyne, but not one in any other of the 76 large towns. The Metropolitan Asylums hospitals contained 71 small-pox patients on Saturday last, July 25th, against 57, 77, and 71 on the three preceding Saturdays; 12 new cases were admitted during last week, against four, 31, and seven in the three preceding weeks. The number of scarlet fever patients under treatment in these hospitals and in the London Fever Hospital, which had been 1646, 1700, and 1710 at the end of the three preceding weeks, had further increased to 1711 at the end of last week; 229 new cases were admitted during the week, against 241, 253, and 243 in the three preceding weeks. The deaths referred to diseases of the respiratory organs in London, which had been 164, 127, and 115, in the three preceding weeks, rose again last week to 130, but were 26 below the number in the corresponding period of last year. The causes of 41, or 1·1 per cent., of the deaths in the 76 large towns last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in West Ham, Bristol, Leicester, Nottingham, Bradford, Leeds, and in 48 other smaller towns; the largest proportions of uncertified deaths were registered in Liverpool, St. Helen's, Blackburn, Sheffield, and South Shields.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been 16·3, 16·2, and 15·2 per 1000 in the three preceding weeks, rose again to 15·4 per 1000 during the week ending July 25th and was 2·0 per 1000 in excess of the mean rate during the same period in the 76 large English towns. The rates in the eight Scotch towns ranged from 11·1 in Leith and 12·0 in Greenock to 16·9 in Glasgow and 19·5 in Paisley. The 503 deaths in these towns included 34 which were referred to diarrhœa, 11 to whooping-cough, seven to measles, six to "fever," and four to scarlet fever, but not one to either small-pox or diphtheria. In all, 62 deaths resulted from these principal infectious diseases last week, against 58, 82, and 57 in the three preceding weeks. These 62 deaths were equal to an annual rate of 1·9 per 1000, which was 0·1 per 1000 above the mean rate last week from the same diseases in the 76 large English towns. The fatal cases of diarrhœa, which had been 17, 31, and 22 in the three preceding weeks, rose again last week to 34, of which 11 occurred in Glasgow, nine in Edinburgh, five in Dundee, three in Paisley, two in Aberdeen, and two in Greenock. The deaths from whooping-cough, which had been 18, 18, and 15 in the three preceding weeks, further declined to 11 last week and included six in Glasgow and four in Edinburgh. The fatal cases of measles, which had been 13 and 11 in the two preceding weeks, further decreased last week to seven, of which four were registered in Glasgow and two in Paisley. The deaths referred to different forms of "fever," which had been six, nine, and three in the three preceding weeks, rose again to six last week and included three in Glasgow and two in Edinburgh. Of the four fatal cases of scarlet fever three occurred in Glasgow. The deaths referred to diseases of the respiratory organs in these towns, which had been 86, 90, and 73 in the three preceding weeks, rose again last week to 79, but were slightly below the number in the corresponding period of last year. The causes of 14, or nearly 3 per cent., of the deaths registered in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 17·2, 18·0, and 16·0, per 1000 in the three preceding weeks, rose again to 17·5 per 1000 during the week ending July 25th. During the past four weeks the death-rate has averaged 17·2 per 1000, the rates during the same period being 13·2 in London and 15·2 in Edinburgh. The 127 deaths of persons belonging to Dublin registered during the week under notice showed an excess of 11 over the number in the preceding week and included nine which were referred to the principal infectious diseases, against five, two, and six in the three preceding weeks; of these, three resulted from whooping-cough, two from small-pox, and one each from measles, scarlet fever, "fever," and diarrhœa, but not one from diphtheria. These nine deaths were equal to an annual rate of 1·2 per 1000, the death-rates from the principal infectious diseases last week being 1·4 in London and 2·7 in Edinburgh. The fatal cases of whooping-cough, which had been one in each of the two preceding weeks, rose last week to three. Two deaths from small-pox were registered, against one in the preceding week. The 127 deaths in Dublin last week included 13 of children under one year of age and 37 of persons aged 60 years and upwards; the deaths of infants showed a decline of 11, and those of elderly persons an excess of eight, as compared with the respective numbers recorded in the preceding week. Four inquest cases and five deaths from violence were registered and 47, or more than a third, of the deaths occurred in public institutions. The causes of three, or more than 2 per cent., of the deaths registered in Dublin last week were not certified.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

In accordance with the provisions of Her late Majesty's Order in Council of April 1st, 1881, Fleet Surgeon Samuel Keays has been placed on the retired list of his rank at his own request. Dated July 14th, 1903.

The following appointments have been notified:—Surgeons: H. V. Wells to the *Dwarf* and G. F. Alderdice to the *Hogue*.

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel J. Armstrong retires on retired pay. Dated July 29th, 1903. Captain R. T. Brown is placed on temporary half-pay on account of ill-health. Dated May 13th, 1903.

Lieutenant Crossley and Lieutenant Harding are posted for duty to the Station Hospital, Shorncliffe, and the Station Hospital, Western Heights, Dover, respectively.

VOLUNTEER CORPS.

Rifle: 1st Nottinghamshire (Robin Hood): Surgeon-Lieutenant J. B. Roberts to be Surgeon-Captain. Dated June 27th, 1903. 2nd Volunteer Battalion the Prince of Wales's (North Staffordshire Regiment): Surgeon-Major H. J. Fausset to be Surgeon-Lieutenant-Colonel. Dated July 25th, 1903.

ROYAL ARMY MEDICAL CORPS (VOLUNTEERS).

The Manchester Companies: George Fyfe Waterson to be Lieutenant. Dated July 25th, 1903.

VOLUNTEER INFANTRY BRIGADE BEARER COMPANY.

5th London: Surgeon-Captain J. G. Fraser, 19th Middlesex Volunteer Rifle Corps, to be Captain and to command under paragraph 55A Volunteer Regulations. Dated July 25th, 1903.

SUNSTROKE: A CALAMITOUS MARCH.

The Vienna correspondent of the *Standard* furnishes some particulars regarding a calamitous occurrence which recently befell some troops engaged in military field operations in Herzegovina. According to the description published in that journal of July 27th it appears that two battalions of the 12th Austro-Hungarian Infantry made a march of some 20 miles and had a sham fight on the way with the garrison of Bilek. This small force suffered so severely from sunstroke that the losses attending these military manœuvres were as serious as in war itself. The mid-day heat was very great, the country mountainous, without shade or water, and the men marched with field service equipment, each man carrying about 50 pounds. According to reports in the Hungarian papers more than 400 soldiers fell out and were left lying on the road, while the War Office admits that no fewer than 15 died from sunstroke and that about 40 more were taken, partially unconscious and in a critical condition, to hospital, while another 60 are suffering less seriously from the effects of sunstroke. The matter has naturally caused a good deal of adverse criticism and the conduct of the military authorities will no doubt be made a subject of official inquiry.

THE ARMY AND NATIONAL PHYSIQUE.

This subject continues to occupy attention and its importance is beginning to be fully recognised. It is the alleged physical degeneration of the class which provides the bulk of our soldiers that mainly concerns us, when the unskilled labouring class is no longer content to remain in rural districts but migrates to large towns and only adds to the existing overcrowding and all the other evils to be found in city slums. Although it is undeniable that a system of national training can do much it manifestly cannot do everything. In cases where the conditions have throughout been exceptionally unfavourable—from infancy upwards to early manhood—it is too late to expect that all the results can be effaced by any mere physical training, notwithstanding that it is capable of doing a good deal under other conditions in improving physical development. We require to enlarge our field for recruiting and to tap other sources of supply.

There will be two vacancies this month in the senior rank of the Army Medical Staff as Surgeon-General W. S. M. Price, Principal Medical Officer, Bombay, reaches the limit of age on August 11th, as does Surgeon-General Sir W. D. Wilson, K.C.M.G., attached to the Home District, on August 27th. The *Army and Navy Gazette* understands that one of these vacancies will be utilised to absorb Surgeon-General W. J. Fawcett, who was recently promoted to act as Principal Medical Officer of the 3rd Army Corps in Ireland.

The number of competitors for 30 commissions in the Royal Army Medical Corps at the examination which commenced on July 29th is 72.

Correspondence.

"Audi alteram partem."

THE CAVENDISH LECTURE ON DISEASES OF THE ASCENDING AORTA.

To the Editors of THE LANCET.

SIRS,—I have read with the pleasure I always experience in perusing his work, Professor T. Clifford Allbutt's lecture on Diseases of the Ascending Aorta, published in THE LANCET of July 18th. I also had the privilege of hearing the Cavendish lecture delivered. We should be grateful to Professor Allbutt, in the midst of his academic activities for having detached himself from these to lay before us so much of interest bearing on his theme and in so happy a manner. For, although the kernel is the meat of the nut, there are those—and I confess myself one of them—who prefer to reach the kernel leisurely with the aid of crackers, artistic in shape if possible, to having the naked contents placed before them in balder fashion. With these remarks I perceive you, Sirs, sympathise in your leading article on the lecture in THE LANCET of July 25th. There are many sound and nutritious nuts in the graceful dish which Professor Allbutt has placed before us, but I have picked up one specially recommended by the lecturer, cracked it leisurely, and laid it aside as not suiting my palate, very possibly owing to some defect in my own taste which I cannot help and can only acknowledge. Perhaps I may in time become less fastidious on this point or even, as is the case with some viands, develop an acquired liking for it. The nut in question has been a very hard one to crack for many a day. There are those, indeed, who affirm with some show of reason that this particular kind of nut has never yet been cracked, often as it has been served up at medical banquets and sometimes with the recommendation that it had been cracked and enjoyed by many notable physiological and medical gourmets. Need I add that the nut in question is that always interesting and still obscure problem concerning the nature and site of angina pectoris. The subject occupies a considerable portion of Professor Allbutt's remarks on the symptomatology of the condition of which he treats. It is with him synonymous with aortic pain, arises in some portion of the aorta more or less near its origin, and causes its fatal results when these ensue by overthrowing the heart secondarily. That such is the case at times I should be the last to dispute, but Professor Allbutt so states his position as to leave the impression that the agony which distresses or kills a patient in these circumstances does *not* frequently arise elsewhere. He even utilises Pawinski's work in support of his "long-published opinions on the nature of angina," and these, as I have said, associate the pain chiefly with the aorta. The condition which Pawinski describes might, of course, be argued to be as closely related to the coronary circle as to the aorta, but it has probably little to do with either and must affect mainly the nervous mechanism common in some measure to both these structures and to the parts immediately inflamed. Pain of sufficient severity in or near the heart, or, indeed, remote from it, will, we know, at times inhibit a heart into syncope, especially if, as Professor Allbutt points out, the organ be degenerate in fibre. When, however, he states that the "glamour of great names," the "tenacity of a habit of thought," and the "sapping effect of fixed doctrine upon simplicity of thought," have had such an effect as too exclusively to fix our regard upon the coronary arteries as the site of angina pectoris, I can only agree with him with some reservation. The coronary arteries may indeed have been too frequently regarded as the place of origin of this important syndrome, but they can scarcely be said to have been too minutely examined. Beyond having been split up, or dissected, or casually inspected at their orifices, so far as my acquaintance with the literature of the subject is concerned, they have rarely been examined by microscopic section sufficiently carefully to declare their true condition and we are even now largely ignorant of their nervous anatomy. But, this aside, my object in addressing you, Sirs, on this point has been to express my conviction that the time is past for too exclusively situating the causes of angina pectoris in this or that tissue of the heart or its neighbourhood, whether it be the aorta, the coronary arteries, the cardiac muscle, or the extra-cardiac nervous system. It may arise in any of these situations or in one or more of them, and to determine where and how in any particular case we require much more minute examination to be made in fatal cases of the textures of and around the heart than has hitherto been the case in reports of the condition, and more especially with reference to that most neglected field in cardiac pathology, the investigation of the cardiac nervous system after death. I trust that the remarks I have ventured to make may not be regarded as presumptuous when offered in criticism of the views of one who has done so much to enlist our interest in this important question, but I feel convinced that until we break loose from the warp of single localisation in theories of angina—a mood observed in so pronounced and dogmatic a manner in the published conclusions of, for example, M. Huchard—we shall long find this subject a very hard nut to crack and not very digestible even when we flatter ourselves that we have succeeded in reaching the kernel of the matter. But I would fain see in Professor Allbutt's references to Pawinski's work the loosening of a too exclusive

attachment to the aortic theory of angina pectoris as published, for example, in his Lane lectures, although some of Pawinski's cases do not present a very striking likeness to the classical features of Heberden's disease.

I am, Sirs, yours faithfully,

ALEXANDER MORISON.

Upper Berkeley-street, W., July 25th, 1893.

THE SOCIETY OF APOTHECARIES OF LONDON AND THE GENERAL MEDICAL COUNCIL.

To the Editors of THE LANCET.

SIRS,—I must, on behalf of the Society of Apothecaries of London, take exception to the leading article in THE LANCET of July 25th, p. 242, commenting upon the recent meeting of the General Medical Council and the consideration which then took place of the reports upon the primary examinations of the Conjoint Board and of the Society of Apothecaries. In dealing with the question of the first year's study the statement is made that the Society, following in the wake of the Conjoint Board, has so far failed to carry out the spirit of the recommendation of the Council that it has accepted the last year of study of any boys' school, in which there might be a pretence of playing at science teaching, as the first year of the medical curriculum. I am not concerned to inquire whether this is or is not a correct description of the teaching institutions recognised by the Conjoint Board but not approved by the General Medical Council, to which institutions I assume the statement alludes, but in justice to the Society of Apothecaries I must point out that only candidates who have studied either at medical schools or at institutions recognised by the Council are admitted to the Society's primary examination.

I also regret to notice in the article statements which appear to link the Society with the Royal Colleges in what is termed an "opposition" to the General Medical Council, an "opposition" which, in the case of the Society, I have no hesitation in saying, is entirely non-existent. The Society of Apothecaries is now, and always has been, most anxious to work loyally and to the best of its ability with the Council and has, in fact, consistently done so, recognising fully that the strength and usefulness of the Council can best be maintained by generous coöperation on the part of the licensing corporations; and it has certainly at no time in the past taken up the position, in the words of your article, of "defending its rights and privileges" against "aggression" on the part of the Council, nor does it intend to do so now. I think it is only necessary to refer to the conciliatory terms of the Society's reply to the recent visitors' report on the primary examination to recognise that it is entirely beside the mark to ascribe any intention of hostility or opposition on the part of the Society to the General Medical Council. I am, Sirs, yours faithfully,

A. MOWBRAY UPTON,
July 28th, 1903. Clerk to the Society.

THE OVERTRAINING OF MIDWIVES.

To the Editors of THE LANCET.

SIRS,—It is understood that the Midwives Board is formulating the rules for the training of midwives under the Midwives Act. May I, as one who has in a humble way supported legislation in the interest of the poorer classes of women who have to rely in the hour of their need on midwives, claim to say a word at this juncture? There is a tendency, perhaps a natural tendency, now that the Act has been gained to overdo what was meant to be done by it—in other words, to overtrain instead of training the midwife and to make her superior to the work required of her—viz., to attend poor women in ordinary confinements, to nurse them for a week or ten days afterwards, and on the occurrence of any irregularity or abnormality in mother or child to apply for medical advice and assistance. If this tendency to overtrain is not checked the full blessings of the Act will not be realised. If the midwife is to be trained for two years as a nurse, as suggested at a recent drawing-room meeting, she will be trained beyond the nature and scope of her duties, her price will become prohibitive, and the poor will be driven to resort to all sorts of makeshifts to dispense with her services and will encounter the same risks as at present. I am told by one who ought to know that the extension of the midwives' training even to six months will seriously reduce the number of pupil midwives. To understand the tendency to overtraining and its disadvantages we have only to look at what has happened in the nursing calling. A trained nurse now costs at the rate of from 100 to 150 guineas a year. She (or he) has become a luxury beyond the reach of large sections of the community where there are many cases in which a nurse is more or less needed, though the services required are simple and do not call for the amount of training which is now given. Speaking as a general practitioner this seems to me a serious question. But I am concerned for the moment at the tendency of some of those who have most humanely fought for the training of midwives to carry it to excess. I am sure the friends of poor lying-in women will not misunderstand me when I suggest that they will do well to proceed tentatively and slowly. Two points ought to be remembered. Firstly, that the law contemplates that midwifery is still to be under the care of the medical profession and that in all its unusual forms the midwife is to seek medical assistance. Secondly, our maternity charities show well that with the present training of three months, even in very humble homes, the lying-in mortality is reduced to very small proportions.

I have before me the report of the City of London Lying-in Hospital for the year ending 1902. Of 2242 women delivered by the midwives at their own homes (subject, of course, to the supervision of the medical staff) only two women and 31 children died. It seems reasonable to think that the Midwives Board will do well in the first instance to require but little extension of the same training that has been hitherto found to be sufficient and not to endanger the success of the new Act by pitching too high the standard of education. I am, Sirs, yours faithfully,

Highbury-place, N., July 27th, 1903. J. G. GLOVER.

LONDON RECEIVING HOUSES FOR THE UNSOUND IN MIND.

To the Editors of THE LANCET.

SIRS,—I have just had an opportunity of reading the Bill for the establishment of these houses in the metropolis which has been sent down by the House of Lords to the House of Commons and which will shortly be discussed there. It bears the stamp of careful consideration of all matters vital to the carrying out of the scheme successfully and it is calculated to meet a pressing need, always recognised by those who, like myself, have long been engaged in caring for the unsound in mind in the great institutions of the metropolitan counties and district. But there is one point in the Bill to which I should like to call very especial attention, and that is its phraseology. A liberal and progressive measure in most respects, it is marred by the perpetuation of a misnomer, and that of a very objectionable and degrading kind. I refer to the word "lunatic."

What, I ask, is the real necessity for continuing the use of what is now considered an inaccurate and opprobrious epithet? What have mental disorders to do with the moon? No doubt such disorders do sometimes recur and pass through their phases, but can it be shown or proved that those phases are always coincident with phases of the moon or has it ever been proved that the moon produces or even influences mental disorders? Turning to Dr. D. Hack Tuke's "Dictionary of Psychological Medicine" we find the word "lunatic" defined thus: "(Luna, the moon, from its *supposed influence* in *causing* mental disease) A term applied to those diseases considered to be *under the influence* of the moon's phases, &c." The Act 16 & 17 Vict. Cap. 97, declares that the term "lunatic" shall mean and "include *every person* of unsound mind and every person being an idiot," thus including the mildest as well as the most serious disorders of the mind. It is, doubtless, the established and probably convenient legal term, but possibly we of the long-suffering medical profession have been dominated by so-called legal necessities and technicalities too long for the advantage of progressive medicine in that department, especially wherein it deals with diseases and disorders of the great nerve centres. Surely, if the will exist the skill and erudition of some person, be he legal or be he medical, will devise some words better indicating fact and more appropriate generally than the words "lunatic" and "lunacy."

Before closing this letter I would remark that the Bill in question invites the application of out-patients for relief to those receiving houses. I can imagine some such would-be out-patient debating in his own mind before making such an

application the questions, "Am I or am I not a 'lunatic'?" "Am I or am I not entitled to the relief offered here?" and turning sorrowfully away, unable or unwilling to admit the soft impeachment and being thereupon for ever afterwards a chronicled "lunatic."—I am, Sirs, yours faithfully,

West Malling, Kent, July 25th, 1903. JAMES ADAM.

THE TREATMENT OF GOITRE BY THE USE OF DISTILLED OR RAIN WATER.

To the Editors of THE LANCET.

SIRS,—With regard to the letters of Dr. C. A. Rayne and Dr. W. H. B. Brook in THE LANCET of July 18th (p. 185) and 25th (p. 265), I may say that the use of rain and distilled waters is no new thing in the treatment of goitre. It has been familiar to physicians in diverse parts of the world for a long time. Several cases of cure by this means have occurred in my own practice, as I pointed out in a paper read some years ago at Carlisle at a meeting of the Border Branch of the British Medical Association. I do not think that the cure depends on either rain or distilled water as a matter of fact, but on the fact that the patient is drinking a fluid free from the goitrous poison and in proof of this I may quote the following instance from the writings of St. Lager. "Keyssler says that round Schemnitz in Hungary the goitrigenous action of the waters is so evident that those who go to drink the water of a neighbouring valley have the satisfaction of seeing their tumours disappear." Many similar instances could be quoted. Here is an interesting one, also from St. Lager. "Military surgeons who have observed epidemics of goitre at Clermont and several other towns noticed that the officers and non-commissioned officers who only drank wine escaped the disease." It is a remarkable fact that goitre is unknown in places where rain water only is used—e.g., Constantinople, Venice, parts of Holland and Belgium, &c. Cardinal Billiet has put on record a remarkable case of goitre incidence occurring in the village of Puiset in Planaise. Here he found 17 families more or less afflicted with goitre and cretinism from using the spring water of the country. One family was absolutely healthy and used rain-water only. The best results are obtained, of course, in cases of recently formed goitres as when a considerable amount of fibrous tissue is formed the results are not so good although frequently remarkable.

I am, Sirs, yours faithfully,

LOUIS E. STEVENSON, M.B., &c., F.G.S.

Temple Sowerby, Penrith, July 25th, 1903.

To the Editors of THE LANCET.

SIRS,—The letters in the two last issues of THE LANCET on the use of distilled or rain water in goitre induce me to give briefly my own experience. For the last seven years I have directed patients with goitre to drink distilled water or boiled rain water. During this period I have treated about a dozen cases, some of them from other districts. I cannot say that all have been successful; one patient, a woman with a large goitre of many years standing, died; another took distilled water in considerable quantities for six months, but there was no improvement and she was finally cured by hydrofluoric acid. In this case I am confident that the patient always took the distilled water and continued to do so for 18 months after her cure. Of the other cases all were wholly or partially cured, but I cannot be certain that they always carried out the treatment. The conclusion I have come to is that distilled water is a valuable adjunct in the treatment of goitre, but not of itself a specific. It would be interesting to hear the experience of others on this point.

I am, Sirs, yours faithfully,

ARTHUR C. WILSON, M.B., Ch.B. Vict.

Formby, July 26th, 1903.

MEDICAL DOCTRINES OF HEREDITY.

To the Editors of THE LANCET.

SIRS,—In THE LANCET of July 25th, p. 264, Dr. C. R. Niven takes me to task for having, as he conceives, misrepresented Dr. G. Archdall Reid's position as set forth in that gentleman's letter to you of July 4th, p. 56. Dr. Reid is, I am sure, well able to take care of himself and will be able to judge whether I have misconstrued his position, but I contend that the very passage which Dr. Niven quotes from Dr. Reid's letter fully bears out the construction put on it. Dr. Reid says: "Even if the germ cells are injured, it does not follow that this injury will be perpetuated in their very remote descendants—i.e., in the body cells of the child—at a time long after the injurious agency has ceased to act" and he implies his disbelief in the possibility of such injury being so perpetuated, his whole argument, indeed, being devoted to substantiating that position, which position, if correct, certainly implies that the germ plasm is incapable of receiving permanent injury by the agency of poisons circulating in the blood—that is, of course, that the damage to individual germ cells is never of such a nature as to lead to permanent alteration in the organism which results therefrom. If any injury has been inflicted on the germ cells of a parent by the action of a poison circulating in the blood this can only be judged of by its effects on the offspring. Either a modification can be produced in the somatic cells of a child as a result of such influence or it cannot. If as a result of the development of germ cells in a vitiated nutrient medium the child resulting therefrom is modified in any direction, however slight, then a definite germinal variation has been produced through the agency of the poison in question. If, however, the effect, if any, produced on the germ cells is always more or less evanescent, and if no permanent alteration can be produced in the somatic cells of the child thereby, then it necessarily follows that the child has not been modified in any way and that no harm of any kind has been produced. As the well-being of the offspring is the only thing with which we are here concerned it is a necessary conclusion that if this cannot be permanently injured by the action of poisons on the germ cells of the parent, then it is a matter of indifference as regards the welfare of such offspring whether the germ cells from which it arises are developed in a vitiated nutrient medium or the reverse.

Dr. Niven devotes a portion of his letter to creating for me an imaginary position and then proceeding to criticise it. I suggested that there might be causes of variation other than those comprised in the union of two dissimilar germ plasms, the context clearly showing that I was referring to the possibility of such variation occurring by the direct action of poisons on the germ plasm; but Dr. Niven chooses to assume that I was arguing in favour of the transmission of acquired characters. I argued nothing of the sort and there is not a line in my letter suggesting any opinion of the kind. As a matter of fact, I am entirely in harmony with Dr. Reid as to the non-transmission of acquired characters and have elsewhere[1] expressed myself in favour of the view that on this question "the Weismannian position at present holds the field." It is therefore somewhat superfluous for Dr. Niven to ask me for proof of doctrine which I do not hold and which was in no way raised in my letter. Dr. Niven goes on to say that if injury is done to the growth of the embryo during the pregnancy of a drunken mother that is not a problem in heredity. I never suggested that it was. I have indeed elsewhere[2] drawn attention to the fact that in these cases any injury done to the germ plasm "will be added to, and reinforced by, chronic alcoholic poisoning of the nervous centres of the embryo during the whole period of intra-uterine life." The condition of the mother during the intra-uterine life of the child is one of the disturbing factors which have to be taken into account in endeavouring to form an estimate as to the effect of poisons upon the germ plasm itself, but in the case of alcohol this disturbing factor can often be entirely eliminated as innumerable cases exist of the union of drunken fathers with sober mothers. I am not disputing the general position which Dr. Reid has so frequently insisted on and which Dr. Niven adopts—viz., that nations are sober in proportion to their past experience of alcohol. I think it probable that such an evolution of alcohol-resistant communities has been and is going on, though I would remind Dr. Niven of the striking example afforded by the Mohammedan races which show us millions of human beings who are perfectly sober not by virtue of such an evolution, but in consequence of the operation of religious sanctions. Where I differ from Dr. Reid and Dr. Niven is in the position they take up that an unfavourable variation such as would presumably be produced by the action of alcohol on the germ plasm of the parents would necessarily go on accumulating

[1] Journal of Mental Science, October, 1902.
[2] Ibid.

from generation to generation until the whole race became extinct. Whether it did go on so accumulating or not would depend largely upon the nature of the germ plasm with which it united in the act of fertilisation. Even when many molecules of one germ cell are modified in the direction of instability these may be counteracted and controlled by more stable molecules belonging to the other germ cell and the offspring thus conditioned may be free from taint; a degeneracy which has been begun may therefore be eliminated altogether in future generations. As a matter of fact, such a process of elimination of parental taint by reversion to a more stable ancestry is continually going on side by side with one which reinforces and adds to the degeneracy. There is a great tendency to regression towards the mean standard of the race, as Galton has shown us, and the more persistent nature of racial characters as compared with individual ones, whilst it renders progress of a healthy kind less rapid than it would otherwise be, has also a preservative influence in the opposite direction. I think that the inhabitants of the British Islands may fairly be described as "very drunken"; nevertheless, it cannot, I think, be denied that we have abundance of stable germ plasms in our midst ready, it may be, to neutralise the unstable elements of other germ plasms, rendered such by the action of alcohol, or to supplant these latter altogether.

But, in truth, the laws of heredity are so intricate and we are still so ignorant of their mode of operation that dogmatism in either direction is out of place. The exact experiments which might settle the question cannot, of course, be conducted on the human subject; but it might be possible to obtain results of value by administering alcohol to some of the lower animals such as anthropoid apes or dogs and noting the effect on the progeny. It would, of course, be necessary to give the alcohol in sufficient quantity and for a long enough period of time to get the tissues thoroughly saturated with the poison—to simulate, in fact, the sodden tissues of the chronic alcoholic—and it should be stopped directly conception had been permitted to take place. The relatively undeveloped brains of these animals would render impossible an exact comparison with the human subject, but the experiment would be worth a trial.

In the meantime, I contend that the remarkable frequency with which alcoholism is found in the family antecedents of those who suffer from insanity or the milder forms of mental instability furnishes a *primâ-facie* case against alcohol—that is, in favour of the view that the molecules of the germ cells of the parent are capable of having their development modified by the circulation of alcohol in the blood in such a way as to cause the organism resulting therefrom to develop on abnormal lines. Can Dr. Reid or Dr. Niven furnish evidence to show that on the average the children of alcoholic parentage are as stable and healthy as those of parents not so circumstanced?—I am, Sirs, yours faithfully,

Rainhill, July 26th, 1903. J. WIGLESWORTH.

THE ROENTGEN RAYS IN THE DIAGNOSIS OF PULMONARY DISEASE.

To the Editors of THE LANCET.

SIRS,—It is becoming customary on the part of those who are more or less enthusiastic over the x rays to assert that cases of pulmonary tuberculosis can be detected by these means at an earlier stage and with greater certainty than is possible by the time-honoured method of inspection, percussion, and auscultation in its various applications and refinements. In certain recent communications to THE LANCET[1] this view is upheld and it is therefore with pleasure that one turns to the article of Dr. David Lawson and Mr. Hill Crombie[2] in which a temperate and carefully expressed opinion is pronounced as to certain facts elicited by radioscopy. As, however, the claims put forward by some on behalf of the x rays are such as might lead the unwary to imagine that it is absolutely necessary for them to procure an x ray apparatus in order to do justice to their patients and themselves, I venture to express the opinion that not only are the x rays as a means of diagnosis in early phthisis less valuable and less exact than the ordinary methods, but that in addition, what results they do yield are very frequently unreliable and at the best are difficult of interpretation.

Now, this statement is not made in any spirit of prejudice against the recent science of radioscopy. In the hands of those who have had long practice in its use it is frequently of excellent service in many intrathoracic conditions, more especially in the case of deep-seated tumours, and also, it may be added, as an aid in the diagnosis of pulmonary tuberculosis, but as regards its superiority in the detection of the earliest stage of phthisis statements of a delusive character are being made.

I may preface the brief observations which follow by observing that x-ray workers do not, as a rule, detail the examination by percussion, auscultation, &c., which they have conducted in order to check the results of radioscopy in the diagnosis of early tuberculosis. It may be stated that over a certain area, such and such a note was all that could be elicited, or that the breath sounds were doubtfully so and so, but for anything like a minute, systematic, and exhaustive examination one usually searches their records in vain. But if such a careful detailed examination be not recorded alongside the results of radioscopy, then these results are valueless as comparative data, however confident the assertions based on them.

It is admitted by all radioscopists that it is only in the stage of consolidation, or in other words, after a number of tubercles have fused together so as to form a caseous mass in the lung, that the rays are of any service. Dr. Lawson remarks that the earliest reliable indication of disease affecting an apex is its "failure to light up on the screen at full inspiration to the same extent as the non-affected apex does. This negative quality," he says, "is absolutely diagnostic, either of an active or an arrested lesion. This property also enables one to define the level of the apex of the lungs on each side respectively—a point in diagnosis to which many attach much importance." Now it can scarcely be supposed that the most devoted adherent of x-rayism would allege that such an apex was insusceptible of ordinary diagnosis. On the other hand, I should say that refined tests would indicate commencing involvement of an apex at a considerably earlier stage than that above described, and indeed at a time which may be called pre-tuberculous—i.e., when there is merely comparative impairment of the elasticity of one lung. Such diagnostic tests include the various methods of estimating and comparing the apical excursion on both sides and the "segmental" method as described by the writer.[3] Such tests, also, can differentiate with certainty between an active and an arrested lesion, which, as Dr. Lawson observes, cannot be effected by the x rays.

A sign which has been made much of by radioscopists as denoting either the pre-tuberculous stage or else the deposition of isolated tubercles is a restriction in the excursion of the diaphragm on one side during deep inspirations. It may be true that this phenomenon has obtained prominence since the introduction of radioscopy, but whatever value is to be attached to it, it can be determined with perfect accuracy by the following means: (1) by inspection—Litten's sign—when, with the patient lying in the correct position against the light, the diaphragm shadow can be seen as a thin dark line moving up and down the side of the chest; (2) by percussion, in the form of "limitary percussion"[4]; (3) by auscultation, especially the vocal resonance, the patient having first drawn a deep breath and the stethoscope moved upwards as he expires and counts audibly; and (4) by auscultatory resonance, by means of a tuning fork, a delicate test by which, with the stethoscope placed over the organ and the tuning fork brought towards it, the edge of the lung can be sharply demarcated during inspiration and expiration. These manœuvres, in the hands of those who have practised them, will define the diaphragm excursion as accurately as the x rays. It is, however, to be noted that this "diaphragm sign" is variable, not always trustworthy, and certainly not applicable to all cases. It is easy to see that basal conditions affect it greatly and the same, though to a much less extent, may be said of certain abdominal conditions. First described by F. H. Williams of Boston several years ago and largely quoted since, that acute observer pointed out two facts worth remembering: one that in the healthy chest the excursion on the right side is normally greater in forced inspiration than that on the left side, and the other, that in certain early cases of tuberculosis, although the inspiratory excursion was shortened on the affected side, yet in forced expiration the diaphragm rose higher on the diseased side, in this way the range being about equal on the two sides.

[1] THE LANCET, June 27th (p. 1800) and July 4th (p. 55), 1903.
[2] THE LANCET, July 25th, 1903, p. 212.
[3] THE LANCET, Feb. 14th, 1903, p. 431.
[4] Vide THE LANCET, May 31st, 1902, p. 1526, described by the writer.

That the x rays are apt to mislead it is only necessary to refer to THE LANCET of June 27th, p. 1804, in which an illustration is given in a paper by Dr. J. F. Halls Dally showing a fairly large clear area to the left of the figure, described by the writer of the paper as representing a "space" existing between the lung and the diaphragm—"a clear transparent interval ..... this space corresponds to the lower part of the pleural cavity which the lung does not fill up except on deep inspiration." Now to the uninitiated it would appear from this description as though a vacant space existed in the thorax, or a vacuum of some kind into which the lung descended on inspiration, whereas, of course, the truth is that every hair's breadth of "space" in the pleural sac is permanently filled up, and that when a deep inspiration is taken the diaphragm unrolls or peels off the chest wall, permitting the edge of the lung to extend down concurrently.

In conclusion, I submit that not only can the careful and constant practice of the various refined methods pertaining to ordinary physical diagnosis enable one to demonstrate all that can be shown by the x rays in cases of early phthisis, but that the results so obtained are earlier in point of time, alone trustworthy in respect of differentiation, and in any stage of the disease, free from the pitfalls of radioscopy.

I am, Sirs, yours faithfully,

Henrietta-street, W., July 25th, 1903. A. G. AULD.

ON THE DANGER OF RAILWAY TRIPS TO HIGH ALTITUDES, ESPECIALLY FOR ELDERLY PEOPLE.

To the Editors of THE LANCET.

SIRS,—In the extremely interesting and instructive article on the above subject by Dr. Theodore Zangger in THE LANCET of June 20th, p. 1730, there is the following statement: "Notwithstanding diligent search I have been unable to discover any previous publication referring to the effects of *rapid* changes of altitude on elderly people." Very similar observations to those of Dr. Zangger were recorded by the late Dr. Alfred L. Loomis in the *New York Medical Journal*, June 12th, 1886. In a paper which I published in the *Liverpool Medico-Chirurgical Journal*, July, 1888, on the Oertel Treatment of Heart Disease I referred to the observations of Dr. Loomis and since then I have had many opportunities of advising patients of the risks they were to avoid on their visits to Switzerland. However, the great value of Dr. Zangger's paper is in no way lessened by the fact that he was forestalled by Dr. Loomis.—I am, Sirs, yours faithfully,

Liverpool, July 28th, 1903. JAMES BARR.

THE USES OF PILOCARPINE.

To the Editors of THE LANCET.

SIRS,—A frequent use of this drug in South Africa for pneumonia amongst the blacks in Rhodesia and near Kimberley for about a year without a single death and with uniformly good results has led me to form different opinions with regard to (1) its action, (2) its uses, and (3) its dangers than those learnt from books. Most diverse opinions have been expressed about this drug. Under each of the above headings can I be allowed to give some of my own experiences?

1. *Action.*—In quite a few cases it has no effect whatever except in inducing perspiration. In the majority of cases it seems to have some other effects, of which purging, vomiting, and salivation are perhaps the most frequent. It would appear that, without trying it, there is no telling what its action will be besides that of perspiration. I recollect clearly the action of moderate doses of pilocarpine, nitrate and muriate, in my own case. Nitrate induced perspiration, vomiting, purging, and very slight bronchial expectoration; muriate induced perspiration only. Neither had the slightest effect on the saliva.

2. *Uses.*—In South Africa a white man, an alcoholic with palpitation of the heart, nephritis, and habit of perspiration lost, came to me for treatment. I injected hypodermically one-third of a grain of pilocarpine nitrate. I have never known this fail to induce perspiration and although I have always stopped to give the antidote (atropine) this has never been necessary. The patient afterwards took the same dose, one-third of a grain, by the mouth with no effect, but on hypodermic injection of a similar dose perspiration much more profuse than on the first occasion took place and after this the habit of perspiration without drugs was quite regained. He became a man of free perspiration. Getting good results from its use always; every case of pneumonia recovering; babies, instead of getting ipecacuanha or a mixture containing it when suffering from chill, got pilocarpine, beginning with about $\frac{1}{10}$th part of a grain and increasing the dose every hour till they began either to perspire or to expectorate and got good results.

3. *Dangers.*—I have never had any bad effects from its use. In a few cases the profuse salivation produced by moderate doses has led me to think that if the patient was not strong enough to sit up and to expectorate for an hour there might be a danger of œdema from this cause. I could also understand that a profuse perspiration might be attended with collapse but I have never noticed anything to make me think that pilocarpine has any intrinsic action in depressing the heart and I have given it in the early stages of pneumonia frequently to a patient—as above stated, an alcoholic—with palpitation and to a patient who had malarious fever, enteric fever, and pneumonia at one and the same time.

Can I offer a suggestion concerning its use in Bright's disease, particularly of the practice of using the weaker diaphoretics and other agents until the patient is getting *in extremis* and more or less waterlogged and then, in the absence of perspiration, giving a full or moderate dose of pilocarpine in perhaps a hot pack. The profuse salivation sometimes induced by moderate doses would lead me to think there is greater danger in thus giving, or even incurring, the liability to give pilocarpine in a late stage of illness than in an early stage when time would admit of gradual and careful dosing and the patient was strong enough to expectorate. The dose I have usually given is one-third of a grain hypodermically. Perspiration is generally the quickest effect, appearing in about five minutes; salivation is generally later, but I have known profuse salivation appear in less than a minute with no bad effects. The patient was strong enough to sit up to expectorate. Not infrequently, again, salivation and expectoration are not affected in the slightest. A safer and quicker plan would appear to be to give pilocarpine in very small doses in Bright's disease at the onset as the first diaphoretic agent and then if no objectionable effects showed themselves gradually increasing the dose according to the circumstances of the case until the patient perspired freely, a result which in the vast majority of cases would be attained without the trouble of other agents—hot packs, &c.

I hope these short observations may lead by ventilating the subject to clearer opinions of a drug concerning which most contradictory opinions have been expressed and which outside of its diaphoretic action I have found to be the most varying drug in its effect that I have ever used. I hope also to learn from any of your readers of any dangers, particularly cardiac, arising from the use of this drug, the value of which in pneumonia, particularly in the early stages, has been so frequently witnessed as to recommend its future use.

I am, Sirs, yours faithfully,

WILLIAM ROPER, M.A. Oxon., L.R.C.P., L.R.C.S. Edin.

Bridport, Dorset, July 14th, 1903.

NOTES FROM INDIA.

(FROM OUR SPECIAL CORRESPONDENT.)

Sanitary Reports for Bengal and Assam.—The New Title of the Indian Army Nursing Service.—The Plague Epidemic.

THE sanitary reports for Assam and Bengal for 1902 have just been published. Last year was very unhealthy in Bengal. A curious feature is the high infantile mortality which has been shown during recent years and which in the city of Calcutta is simply appalling. In 62 per cent. of the town areas of Bengal the total deaths exceeded the births. The death-rate from fever in some places is enormous. A district death-rate from fever exceeding 35 per 1000 has been reported on 14 occasions during the past four years and on three occasions has exceeded 40 per 1000 and the Bengal Government has directed that an inquiry should be conducted by a specially qualified officer. The ratio of deaths to attacks from plague fell to 84·6 but this is in excess of what is considered the normal ratio. Calcutta, however, gives a still

higher ratio. The sanitary board continued the inquiry into the septic system for the disposal of sewage and the Lieutenant-Governor now considers that the system has passed beyond the experimental stage and has given sanction to the Muzaffarpur municipality to construct a septic tank. This is an example of how little one province profits by the experience of others. The advantages of the septic tank system have been known for years even in India and yet the Bengal Government must apparently wait for the results of experiments by its own officers before it can recommend the adoption of the system to any one of its towns. This is the first municipal venture in Bengal. In the Assam report I notice an increase in the number of deaths from kala-azar. Plague has made its appearance for the first time, almost entirely in Dibruyarh town and in the bazaar inhabited by foreign grain merchants. The discovery of dead rats was the first indication of danger. In the urban areas of Assam the death-rate was higher than the birth-rate; elsewhere registration is very defective. There was a great increase in mortality from small-pox which is attributed to the visits of Ganaks who practise inoculation. This not being prohibited and vaccination not being compulsory in rural districts there is no wonder that small-pox should be so prevalent. The death-rate from fevers in Assam was 14·7 per 1000. No sanitary work of any magnitude was undertaken during the year. Some boards spent nothing on conservancy, while the expenditure of others was ridiculously small. Sanitary works and improvements are expensive but the reports of these two provinces indicate how very little has been done and go to show the necessity for a radical alteration of the sanitary administration of the provinces in India.

The Indian Army Nursing Service is to be known in future as "Queen Alexandra's Military Nursing Service for India."

A set of x-ray apparatus with a duplicate set of cells will be supplied on loan to the Medical College, Calcutta, by the Medical Stores Depôt, Bengal. This will be curious news to your readers at home as they would naturally expect that the largest medical school in India and the practice ground of the hospital surgeons of Calcutta would have been provided with this apparatus for several years past. Had the hospital honorary physicians and surgeons as in London it is safe to say that such a want would have been filled long before this.

The plague epidemic continues to subside and has now for the first time this year shown fewer deaths than in the corresponding week of last year. 1362 deaths were recorded for the whole of India, of which 390 occurred in the Punjab. The figures for Bombay, however, instead of falling continue to show a slight rise and the reports from the Madras Presidency and the Mysore State are not satisfactory. There is a small outbreak developing in Ootacamund and in the Nilgiris district. There is every reason to believe that the present low mortality is only temporary and that in the course of the next few months a recrudescence will be seen once more in several parts of India. There are now more centres of infection and the next outbreak will probably be more severe than any we have had before.

July 10th.

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

Presentation of Dr. Renaud's Portrait to the Royal Infirmary.

AT the meeting of the infirmary board on July 27th Mr. J. Thomson, the chairman, accepted on behalf of the board a portrait of Dr. Frank Renaud who resigned his official connexion with the infirmary last October. It has been privately subscribed for by friends and colleagues and will be hung in the board room. Dr. Renaud was elected physician to the infirmary in 1848, became consulting physician in 1867, and at a later period was invited to join the board, of which he remained a member till October, 1902. He had endeared himself to all by his courtesy and kindness and the promotion of the welfare of the infirmary has been one of the chief interests of his life. He held strong views as to the desirability of keeping the infirmary on the Piccadilly site and when on the question of removal the decision went against him he severed his long connexion with the institution which he loved so well and for which, as physician and as one sage in counsel, he had done so much. As Mr. Thomson said: "The portrait was before them and he was sure they would all have the greatest pleasure in seeing it hung on the walls of that room to recall to them a familiar face—a face which they would look upon with affectionate regard."

The Lord Mayor of Manchester and Vivisection.

On July 25th an anti-vivisection meeting was held on the lawn of Hopwood Hall, near Middleton. Mrs. Hopwood introduced the Lord Mayor of Manchester who then took the chair. The Mayor of Heywood and the Mayor of Middleton were also present. The chairman said that the object of the meeting must commend itself to all right-minded people and that "the sights he had seen many years ago, not so much in this country as on the continent, in relation to the treatment of dumb animals had been shocking in the extreme." No one who knows the Lord Mayor would question his kindness of heart and his single-minded wish to do good when taking the chair at this meeting; but what connexion there is between the cruelty of the people in many parts of the continent towards the animals they employ in their daily work and the practice of vivisection carried on under careful Government regulations and with the elimination of pain by anæsthetics he did not explain. It is practically certain that none of the perpetrators of the cruelties which so properly shocked him ever heard of vivisection as it is conducted in the interests of medical science and for the relief of human suffering from disease. Nor were they people who had been brutalised and made callous, as the anti-vivisectionists are fond of saying, by the proceedings of men of science. Vivisection and cruelty to animals are not interchangeable terms but things distinct and separate. The Lord Mayor, however, was very frank, for he is reported to have said that "he had not studied the question of vivisection sufficiently to be able to entertain or enlighten them," but he was glad that Mrs. Hopwood had taken the matter in hand. This naïve confession of ignorance detracts somewhat from his advocacy of anti-vivisection. Whatever we may think of Mrs. Hopwood's advocacy of this cause there is another crusade in which she has displayed marvellous energy and that is in combating the smoke nuisance in her neighbourhood, which is one of many works and many chimneys. The whole district owes much to her and all may join with the Lord Mayor when he said that "he was glad that she had been able to deal with the smoke nuisance in the neighbourhood, not only to the benefit of those who had to live amongst it as workmen, but also to the benefit of those who created the smoke." Granting unreservedly that she also was influenced solely by the wish to do good it may be safely assumed that she knows much more about the smoke nuisance than about vivisection, more especially if her mind has been fed by the ordinary anti-vivisection literature.

Regulation of Registry Offices.

A good deal is heard from time to time of the white slave traffic between this and other countries and a clause in the Manchester Corporation Bill, recently before a Parliamentary committee, shows that there is another branch of the same traffic where perhaps it has not been suspected. The clause is to the effect that all female servants' registry offices shall be registered at the town hall, with the name and place of abode of the proprietor. The counsel for the corporation said there were 88 registries for servants in Manchester and "that it was impossible to conceive that all these places were carrying on a legitimate business." He cited as an example an advertisement that appeared in a country newspaper, asking for "50 generals and girls" and promising "splendid places and good wages." The girls went, were unable to obtain places because there were nothing like the number advertised, "their money was soon exhausted and many of them fell into immoral courses." There are unquestionably respectable offices and the reputable ones do not object to registration. The police-court missionary said that some of the offices as at present conducted were undoubtedly the cause of many girls being demoralised and that there had "been cases in which girls were sent from registry offices to houses of questionable character." It is clearly to the interest of the country on physical as well as on moral grounds that there should be some means of safeguarding ignorant and unsuspicious girls flocking into towns like Manchester.

Penal Servitude for Women.

As the Staffordshire Assizes on July 27th two women were

sentenced to penal servitude. One got seven years' imprisonment "for administering a noxious drug for an unlawful purpose" to two women, one of whom died. The mother also of the prisoner was sentenced to four years' imprisonment for a similar crime. The drug was "diachylum," which set up lead poisoning. It was stated at the trial that "the Treasury were anxious the public should know the danger of taking diachylum," but the women who practise the trade of abortion producers do not wish to know.

A Jewish Hospital for Manchester.

The foundation-stone of the Manchester Victoria Memorial Jewish Hospital was laid on July 23rd. It is situated in the Cheetham district, part of which is occupied largely by Jews. It is expected to cost, when completed, £10,000 or £12,000. At present, however, the committee only intends to provide ten beds, which will involve an outlay of about £4000. The completed hospital is to have 40 beds, 20 for each sex. The Jews in Manchester show a commendable endeavour to bear each others' burdens. They have for many years had their own board of guardians for the relief of their own people and now they are building a hospital. The Chief Rabbi said that while "it was the bounden duty of Jews to establish such a hospital it did not mean that they would withdraw their support from the existing medical charities."

July 28th.

WALES AND WESTERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENTS.)

Glamorganshire County Asylums.

THE Glamorganshire County Asylums at Bridgend which were established in the year 1864 have now accommodation for 1801 patients, 912 males and 889 females, and the medical superintendent (Dr. H. T. Pringle) states in his annual report that on Dec. 31st last there were resident in the institution 1000 male and 910 female patients. This overcrowding will no doubt be lessened upon the completion of the Cardiff Asylum which is now in course of erection. There were admitted during 1902 to the county asylums 526 patients, a number equal to 596 per 1,000,000 of the population served, compared with 583 per 1,000,000 in 1901. In 1879 the admission rate was equal to 256 per 1,000,000 inhabitants. During 1902 there were 181 deaths among the patients at Bridgend.

Pauperism in South Wales.

Mr. F. T. Bircham, the Poor-law inspector of the Local Government Board for South Wales and Monmouthshire, has recently issued statistics relating to his district in which he compares the amount of pauperism on March 25th, 1903, with that on the same date in 1893. There were on Lady Day, 1903, in the whole of England and Wales 2·2 per cent. of the population in receipt of parish relief and in the six South Wales counties and Monmouthshire the percentage was 2·6, compared with 2·8 in 1893. As might be expected, the highest proportion of pauperism was in the rural districts; for example, it was 3·4 per cent. in the Haverfordwest union and 3 per cent. in the Carmarthen union, while in the colliery districts the proportion was low, being in the Merthyr union 2·3 per cent. and in the Pontypridd union only 2 per cent. The amount of pauperism in Cardiff increased from 2·2 per cent. of the population in 1893 to 2·5 per cent. in 1903, and in Swansea the increase was from 2·6 per cent. to 3·2 per cent. in the like period.

Health of Newport (Mon.).

In his recently issued annual report upon the health of Newport the medical officer of health (Dr. J. Howard-Jones) estimates the population of the borough at the middle of 1902 at 68,862 and he records a birth-rate of 32·8 per 1000, a death-rate of 15·8 per 1000, an infantile mortality rate of 125 per 1000 births, and a death-rate from the principal zymotic diseases of 1·92 per 1000, or, including tuberculosis, a zymotic death-rate of 3·74 per 1000. It is not at all satisfactory to find that, although Newport is essentially a water-carriage town, there are still in the older portions of the borough a large number of water-closets which are hand-flushed. It appears that a charge is made for water supplied through a flushing cistern and the medical officer of health very properly remarks that this amounts to a tax upon cleanliness and interferes very considerably with the adoption of cisterns throughout the town. When the new water-supply which is now approaching completion is actually available the corporation will be well advised if it abolishes this most unnecessary as well as most unusual charge. The proper supervision of dairies and cowsheds, in Dr. Howard-Jones's opinion, is a national matter and deserves as much consideration as the inspection of factories and workshops, for the conditions and practices obtaining in dairies generally in respect to hygiene are often disgusting when considered in detail, and as towns are usually dependent upon the country for their milk-supplies they are practically helpless in the matter in spite of local Acts of Parliament.

British Dental Association.

The annual meeting of the Western Counties branch of the British Dental Association was held at University College, Bristol, on July 24th, under the presidency of Mr. S. G. Yates (Ross). There was a large attendance which included Mr. Walter Harrison (president of the British Dental Association). Mr. Yates gave an interesting address, after which he vacated the chair in favour of Dr. C. A. Hayman (the president-elect) who delivered the presidential address. In the evening the annual dinner was held at the Clifton Down Hotel, Dr. Hayman presiding.

Medical Cricket Match.

A cricket match was played on July 22nd at the county ground, Bristol, between representatives of the Bristol General Hospital and the Bristol Royal Infirmary respectively. The match used to be an annual affair and this year it has been revived. The match resulted in a success for the infirmary.

July 27th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Isolation Laundries.

AT the last meeting of the Rathkeale board of guardians Lady Monteagle drew attention to the difficulty existing in the workhouse with regard to the washing of the clothes of patients suffering from infectious diseases. The latest discoveries in bacteriology, she observed, had shown that many of the germs of infection were not killed by hot water and therefore she was of opinion that a place distinct from the ordinary laundry of the house should be constructed for the treatment of infected clothes. After some discussion the matter was referred to the engineer for a report.

Rabies in Ireland.

During the greater part of 1901, the whole of 1902, and for over six months of the current year no case of rabies has been reported in Ireland. The latest published official returns, however, show that a case of the disease has recently appeared in the county Sligo. Inasmuch as sporting dogs will soon be moved about and across the Irish Channel in large numbers in connexion with the coming grouse season the discovery is of some significance.

Opening of the New Royal Victoria Hospital, Belfast.

During their visit to Belfast on July 27th their Majesties the King and Queen visited the new Royal Victoria Hospital for the purpose of performing the opening ceremony. Arriving at Grosvenor-street in state at a quarter to one o'clock the King and Queen were received by the Lord Mayor (the Right Hon. Sir Daniel Dixon, D.L.) and Mr. and Mrs. Pirrie, with whom they shook hands. The chairman (Mr. W. Crawford) having been presented read an address on behalf of the board of management, the construction committee, and the medical staff, to which the King replied. The following gentlemen were then presented: the Right Hon. T. Sinclair, D.L., member of the construction committee; Mr. R. H. Reade, D.L., chairman of the relations committee; Mr. A. M'Dowell, honorary secretary and solicitor of the various committees in connexion with the building of the hospital; Dr. J. Walton Browne, chairman of the medical staff; Sir William Whitla, senior physician; and Mr. Henman, the architect. Mrs. Pirrie then presented the King with a massive gold key and on behalf of the construction committee begged his acceptance of it and asked him to open the new hospital which was named after his beloved mother. The King then turned the key, the door opened, and their Majesties, escorted by Mr. and Mrs. Pirrie and followed by the Royal suite, passed into the

hospital and began their inspection of the building. From the entrance hall they went to the board-room and then crossed the main corridor and entered the ward named after Mrs. Pirrie, remarking here that Mrs. Pirrie must be very gratified that all the beds, as shown by the inscription over each, had been endowed. Here Miss Carlisle—sister of Mrs. Pirrie—was presented by special request of Her Majesty. In this ward is a tablet with the following inscription :—

This hospital owes its origin to the Right Hon. W. J. Pirrie and his wife, Margaret M. Pirrie, of Ormiston, Belfast, who not only contributed largely to its construction and equipment, but by their untiring efforts in connexion with its organisation, furnishing, and endowment, enabled it to be opened free of debt, as an efficient medium for the relief of the sick and suffering poor. To perpetuate the memory of their many acts of kindness to and interest in the hospital and to encourage others to do likewise this ward bears the name of Margaret M. Pirrie.

On leaving the ward their Majesties proceeded through the ward kitchen and lecture-room into the main corridor and entered the operating theatre between the Chartres and the W. J. Pirrie wards. Here the matron (Miss Bostock) was presented by request and Professor T. Sinclair demonstrated for the King the use of the fine operating-table supplied by Mr. Down of London, who was present. The Queen and the Princess Victoria took a lively interest in examining the surgical instruments and asked many questions of Professor Sinclair. The King and Queen with Princess Victoria, escorted by Mr. and Mrs. Pirrie and accompanied only by their suite, then walked along the corridor and entered the women's ward which Her Majesty was to name after her eldest son, the late Duke of Clarence. Mr. Pirrie presented Professor J. W. Byers (physician to the ward) to His Majesty who cordially shook hands with him and carefully inspected the ward, asking many questions. The Queen, who in the meantime had been shown round the ward by Mrs. Pirrie, then formally went through the simple ceremony of naming the ward, saying : "I name this ward the 'Clarence' in loving remembrance of our son." On Professor Byers being then presented to Her Majesty she shook hands and said that she had never seen a more beautiful hospital and added, with deep feeling, that the King and herself were greatly gratified at having a ward named in memory of their dear son. Professor Byers said that Mr. and Mrs. Pirrie (to whom they owed so much in connexion with the hospital) and all those associated with the hospital felt that a remarkable and unique honour had been conferred on Belfast and on that institution by Her Majesty naming the ward the "Clarence." In the north gable of the ward a tablet with the following inscription has been erected :—

Their Majesties, King Edward and Queen Alexandra, on the occasion of the opening of this hospital, were graciously pleased to name this ward the "Clarence" in memory of their beloved son, the Duke of Clarence, who is held in affectionate remembrance by the citizens of Belfast.

Nothing could have surpassed the cordiality of their Majesties who were clearly gratified with the action of the construction committee in setting apart a ward to be called after their late son. Their Majesties then left this ward and in the main corridor seemed pleased with a welcome in Danish. They then slowly passed through the great extern hall, which was crowded with people, and here the builder, Mr. W. H. McLaughlin, was presented to His Majesty, who said, as he shook hands, "You have made a beautiful building—a beautiful building." Leaving the hospital by the outer door of the extern hall their Majesties were loudly cheered by the immense concourse of people on the stands and at the hospital gate they heartily shook hands with Mr. and Mrs. Pirrie. The judges (who were on assize), the High Sheriff, the Lord Mayor, the Marquis and Marchioness of Londonderry, the Dowager Marchioness of Dufferin, the Earl and Countess of Shaftesbury, with their numerous house parties, and an immense number of the most prominent citizens of Belfast and Ulster were present in different parts of the hospital or of the royal route traversed by their Majesties in the hospital grounds.

July 28th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Glycogen in Therapeutics.

M. NITTIS has recently been making some researches into the action of glycogen and has been struck by the fact that if given in various cachectic states, whether accompanied by fever or not, it has a wonderful effect in increasing the resisting power of the organism, in aiding nutrition, and in fattening the patient. He read a paper on the subject before the Academy of Medicine at the meeting held on July 7th, in which he said that a patient who took a daily dose of from 10 to 15 centigrammes increased in weight during a period of one week by one kilogramme. Glycogen, of course, is the singular substance allied to sugar which was discovered by Claude Bernard. M. Nittis has given it in typhoid fever, influenza, pneumonia in an old man, and in pleurisy. In each case he has noticed an improvement in nutrition and a shortening of the period of convalescence.

The Tuning-fork in Medicine.

At the meeting of the Academy of Medicine held on July 15th M. Bouchard brought forward a new method for the examination of internal organs based upon some researches into the physical properties of the tuning-fork by M. Mignon of Nice. The method depends upon the differences of note in a tuning-fork applied to various regions. Resonance is studied by placing the chest-piece of a phonendoscope close to the tuning-fork. Conduction, on the other hand, is studied by placing the ear or the phonendoscope at some distance from the tuning-fork, when the conducting power of the tissues between the two can be estimated. Resonance is greater as the tissues are less dense, while conducting power is greater according as the tissues are more dense. At the close of the meeting M. Mignon gave a demonstration of the method, applying it to the head, the lungs, and the osseous system.

A Method for the Extraction of Filariæ.

At the meeting of the Hospitals Medical Society which was held on July 17th M. Béclère gave an account of a method for the extraction of a filaria which he had recently employed in the case of an officer on his return from the Sudan. The parasite in question was the filaria medinensis and measured 85 centimetres. M. Béclère rolled it round a match in the usual way but he was enabled to avoid the frequent breakages which generally happen by applying chloroform to the free end of the worm which had made its appearance at a small bleb in the thigh. Thanks to the chloroform, the parasite was extracted in only two pieces. The small sinus left rapidly healed. M. Antony in commenting on the case referred to a somewhat analogous method employed in Mexico by a French military surgeon in a case in which the larvæ of a fly had been deposited in the nasal fossæ of a man who had gone to sleep in the open air. M. Achard reminded the meeting of the method pursued by an American surgeon for the extraction of a tænia. Every medical man knows how often the head of a tænia fails to come away and the American observer as soon as the tail proglottides appeared at the anus of the patient injected them with morphia. In this way the worm being narcotised exerted no more resistence and was expelled entire.

July 28th.

NEW YORK.

(FROM OUR OWN CORRESPONDENT.)

Mosquitoes and Yellow Fever.

THERE are many medical men in the United States who have not accepted in its entirety the findings of the late Dr. Walter Reed and the other members of the United States Army Board, that mosquitoes are alone responsible for the dissemination of yellow fever. In the Southern States especially a strong opposition to these views exists. A Cuban physician, Dr. Ybarra, who is now in New York, is a dissenter from the proposition that to mosquitoes solely is due the spread of yellow fever, and he frames his objections as follows : "The house in which the experiments were conducted by the American Army Board was not under normal conditions, nor was it a Cuban-built house, but, on the contrary, it was built especially for the purpose, without any circulation of air. ..... There was not due care in the selection of the non-immune persons upon whom the infection experiments were made, probably some already immune to yellow fever being among them." Dr. Ybarra gives a few facts which in his opinion demonstrate that hygiene, sanitary reforms, and isolation of the sick are more powerful factors in the eradication of yellow fever than the mere protection

of the sick from the bites of mosquitoes. He says: "In the city of Havana alone mosquitoes have been killed to extirpate yellow fever. In no other city or town in Cuba has this measure been put into practice and yet yellow fever has disappeared, not only from Havana, but equally as well from all the other cities and towns." The argument of Dr. Ybarra, as of many Southern physicians, is that improved sanitary and hygienic measures are the true cause of the apparent extirpation of yellow fever in Cuba. Nevertheless, the fact cannot be evaded that the late Dr. Reed and his colleagues conclusively proved that yellow fever is spread by mosquitoes. Accordingly the extirpation of mosquitoes in Cuba should be carried on with undiminished zeal.

A Parasite Fatal to the Mosquito.

Dr. Charles Wardell Stiles, of the United States Public Health and Marine Hospital Service, claims to have discovered and isolated a parasite which kills those mosquitoes which it infests. Professor John B. Smith, of Rutgers College, forwarded to Dr. Stiles for examination two worms which had been taken from the abdominal cavity of New Jersey mosquitoes. Dr. Stiles decided that these specimens were larval round-worms belonging to the family mermithidæ and named the parasite "agamomermis culicis." The New York *Sun* referring to the matter states that the mosquitoes infested with the parasite are sluggish in their movements and do not live long and that the females infected do not breed. It is further announced that the Public Health and Marine Hospital Service intends to undertake experiments on a large scale with a view to propagate the "mosquito destroyer," thereby attempting to exterminate mosquitoes in the United States.

Statistics of Suicide in the United States.

Professor Bailey, of Yale University, has for several years interested himself in the question of suicide and has published statistics of suicide in the United States from 1897 to 1901. The Chicago *Tribune* has also kept a similar record, but whereas Professor Bailey has collected his statistics for a period of four years only the *Tribune* has done so for 18 years. Professor Bailey publishes a total of 29,344 cases of suicide during the four years, while for the same period the *Tribune* recorded 30,462. Professor Bailey finds that "shooting is the favourite method of suicide, followed closely by poison. Almost 60 per cent. of the cases of suicide are included under these two heads." The *Tribune* remarks that this may have been true at the time of writing but is so no longer. Since the end of the year 1900 up to the present time the number of self-inflicted deaths by poison has considerably exceeded the number by shooting. The increase in poisoning is attributed to the ease with which certain poisons, and notably carbolic acid, can be procured. Professor Bailey states, reasoning from his figures, that in general the proportion of suicides of males to that of females is about three and a half to one. The *Tribune*, however, judging from later statistics asserts that such is not now the case. At the present time the ratio is less than three to one, and the number of women committing suicide is increasing faster proportionally than the number of male suicides.

General Army Hospital in Washington.

Under an Act passed during the last session of Congress the Surgeon-General of the United States Army is having a sketch made of the arrangement of a group of buildings to serve as a general army hospital in Washington. There has, however, as yet been no appropriation made either for the purchase of the site or for the erection of the buildings.

July 17th.

Obituary.

SAMUEL FARRANT, M.R.C.S. ENG., L.S.A.,

HONORARY CONSULTING SURGEON TO THE TAUNTON AND SOMERSET HOSPITAL.

MR. SAMUEL FARRANT died at his country residence, Amherd, Pitminster, on July 18th, in his sixty-sixth year, from heart failure. Mr. Farrant went to Taunton in early life as pupil to the late Mr. C. H. Cornish and on becoming qualified he commenced practice in the town and continued it up to his death. He was for a long period honorary surgeon to the Taunton and Somerset Hospital and upon his retirement a short time ago he was elected honorary consulting surgeon. Mr. Farrant had an extensive practice and a considerable reputation as an ophthalmic surgeon. He took a great interest in municipal matters and was at one time mayor of Taunton. He was also a surgeon-lieutenant-colonel of the West Somerset Imperial Yeomanry. Mr. Farrant was a strong Churchman and had filled the office of churchwarden at both St. Mary's and St. James's churches. He initiated and carried out a restoration of the latter church a few years ago.

Mr. Farrant was for 40 years one of the district medical officers of the Taunton board of guardians. The deceased was one of the representatives of Taunton on the Somerset county council at the time of his death. He enjoyed great popularity in Taunton and much sympathy is felt there for his widow and children. At the funeral, which took place at St. Mary's cemetery, Taunton, on July 22nd, the mayor and corporation attended in state and representatives of the various public bodies with which the deceased was connected were also present, including a considerable number of members of the West Somerset Imperial Yeomanry, headed by the commandant (Colonel Barratt, J.P.).

JOHN ALEXANDER COOKSEY, M.R.C.P. EDIN., M.R.C.S. ENG.

MR. J. A. COOKSEY, whose death took place on July 19th, at his residence, The Lynches, Malvern, was the eldest son of John Haynes Cooksey and was born at Worcester on May 15th, 1820. The family have been connected with the county for centuries and were formerly considerable landed proprietors. The deceased was educated at the High School, Edinburgh. He was a favourite pupil of the late Mr. Carden of Worcester, a well-known surgeon, and he completed his medical course at St. George's Hospital, London. In 1845 he became M.R.C.S. Eng., in 1859 L.R.C.P., and in 1878 M.R.C.P. Edin. After working with the late Dr. John Berry for about two years at Coventry he purchased a practice at Chipping Campden, Gloucestershire. There he remained for about 15 years, during which time the practice greatly increased. In his comparatively early Chipping Campden days an action was brought against him, but the charge was so utterly without any foundation that when the day for the trial came counsel withdrew the case. The action aroused widespread sympathy and a testimonial was presented to the defendant consisting of both plate and money. In 1863 he sold his practice at Chipping Campden and settled at Malvern, where he practised for 21 years and took an active part in the erection of the rural hospital and other local improvements. In 1876 he again appeared as defendant in court, but he won an easy victory, the jury not thinking it necessary even to hear all the witnesses for the defence and declaring that he left the court without the slightest stain on either his professional or private character. The action had aroused much interest in Malvern and a second testimonial was presented to Mr. Cooksey. He retired from practice in 1884, chiefly on account of deafness, being succeeded by the late Dr. Prothero, with whom he had been in partnership for two years.

NATIONAL ORTHOPÆDIC AND ROYAL ORTHOPÆDIC HOSPITALS.—At a special meeting of the governors of the National Orthopædic Hospital on July 24th, held at the hospital in Great Portland-street, London, the following motion was duly passed:—

That the amalgamation of the National Orthopædic Hospital and the Royal Orthopædic Hospital on the arrangements agreed upon at the meeting of the committee of management held on March 20th, 1903, is approved of.

Before this resolution was formally adopted the chairman, Mr. Robert Cooper, read out the following letter signed by Mr. E. Muirhead Little, honorary secretary of the medical board of the hospital:—

July 22nd, 1903.

DEAR SIR,—At a meeting of the medical board held at the hospital this afternoon I was desired to ask you to lay before the governors at their special general meeting on the 24th inst. the following resolution which was unanimously passed by the board: "That it having been reported in the press that on amalgamation of the 'Royal' and the 'National' Orthopædic Hospitals the surgical staffs of the two hospitals as at present constituted would be joined together, the medical staff of this hospital desire emphatically to state at the special general meeting of governors called for July 24th to consider the question of amalgamation their absolutely unanimous opinion that all members of the surgical staff of the amalgamated hospitals—without any exception—must be F.R.C.S. England, which stipulation they have understood from the chairman of the committee of management has always been put forward by him in the negotiations with the King's Hospital Fund."

THE BRITISH MEDICAL ASSOCIATION.

MEETING AT SWANSEA.

THE meeting of the British Medical Association at Swansea marks its seventy-first anniversary, and this is, we believe, the first occasion upon which the association has selected Swansea for its annual congress.

We may repeat with regard to Swansea what we said last year concerning Manchester—it is not a lovely city. The critics who are ready to point out that medical and other scientific congresses have much lost their serious value, having developed, or rather degenerated, into picnics, must acquit the executive of the British Medical Association of choosing in Swansea a place the intrinsic attractions of which will draw members away from the meetings of the sections. But Swansea was not always ugly. It has become so in the course of its commercial development, in passing from what it was in the old days, a much patronised health resort, to a busy industrial centre. The health-giving properties of the environment of both sea and country, however, remain and numerous little health resorts have sprung up to the westward in Swansea Bay extending to the Mumbles and beyond to Langland Bay. Here the scenery is most interesting, the coast being of a wild and rugged type, like that of Cornwall, bounded with steep crags of greystone. This beautiful district is locally known as the Mentone of South Wales, the name being due to the curious mania that we have as a nation of belittling our own natural beauties by nicknaming picturesque localities after foreign places. The title of "Mentone" would seem to be justified from the fact that while in winter the weather is genial and mild, the inland heights serving as a source of protection from the north and east winds, in summer it is bracing. The temperature keeps within the limits of the temperate zone, but a somewhat heavy rainfall is annually recorded. The weather is frequently of the Atlantic type. Towards Langland Bay may be seen groups of plants and trees which are characteristic of southern stations, such as Torquay or the Riviera.

But Swansea proper is now a purely commercial centre and by the Association's decision to hold the annual meeting in Swansea this year medical men have found themselves gathered together in a busy shipping centre with evidences of docks, foundries, collieries, and busy markets on all sides, and through some of the streets are railways for heavy mineral traffic, recalling busy places in the vicinity of the docks of London or Liverpool. The industrial progress of Swansea has been enormous during past years owing to the rapid development of coal-mines and of a big mineral trade directed chiefly to the smelting of copper, iron, and nickel. But the greatest of all industries perhaps is the tinplate trade, this class of goods being exported in enormous quantities to all parts of the world. Within a four-mile area it is stated that there are close upon 200 works in Swansea. Not far from Swansea is Landore which is a huge blot both on the land- and sea-scape. By day it is seen to be smothered in a cloud of black smoke and by night it has the weird, uncanny aspect of a valley full of many-coloured blazing chimneys and furnaces. It is obvious that the chief occupations of the inhabitants of Swansea call frequently for surgical and medical aid and the town has an excellent equipment in this regard, as exemplified by the Swansea Hospital and several dispensaries. There is also an institution for the deaf, dumb, and blind.

The annual museum was held in the public library in the Alexandra-road. The organising committee evidently met with some difficulty in providing a suitable place for the purpose. Otherwise it might be imagined that a drill-hall or some other building of plain description would have been chosen instead of the rooms and corridors of an art gallery. The exhibitors, at any rate, ought to be pleased with the space placed at their disposal and with its attractive surroundings in the shape of pictures, statuary, and other art productions. There was, however, some difficulty experienced in placing the exhibits to the best advantage owing to the very proper restrictions laid down by the authorities as to the use of nails or hoardings on the walls. The pictures were thus left in their position, but some of the statues had of necessity to be removed. The exhibits occupied the ground-floor and the first and second floors of the building. Those exhibitors who occupied the ground-floor were decidedly favoured, for at first sight the visitors concluded that the exhibition was limited to that floor. Owing probably to the rainy weather on Tuesday a very good start was made and the influx of interested persons almost reached crowding point. Several local firms were represented. In another column we commence an article descriptive of the interesting exhibits of foods, drugs, and sanitary and medical appliances.

At the first general meeting H.R.H. the Prince of Wales was elected an honorary member of the British Medical Association. "Not only for the honour his membership will confer on the Association, but for the distinguished services His Royal Highness has rendered to the medical profession," were the words of the motion recommending the election which we need hardly say was unanimous. This was a fitting sequel to the precedent created some few years ago when His Majesty the King, then Prince of Wales, gave one of his numerous proofs of interest in the medical profession by accepting the honorary membership of the Association. So recently as last month the Prince of Wales was showing similar interest in a most useful and practical manner by presiding at the festival dinner of the Royal Medical Benevolent College with most satisfactory results to that excellent institution, and there is no doubt that in the Heir Apparent we have a friend to scientific and medical progress who will be ready to use his exalted position for the general advancement. A telegram was received from His Royal Highness during the meeting thanking the Association for the honour conferred on him. Dr. T. D. Griffiths afterwards delivered the presidential address, which will be found in another column.

The Address in Medicine, which we also publish this week was delivered by Dr. Frederick T. Roberts, senior physician to University College Hospital, London, on Wednesday evening.

The local entertainment sub-committee, under the chairmanship of Mr. Jabez Thomas, has worked hard to provide recreation for the members and to furnish them with opportunities for seeing the sights of the neighbourhood. One of the most popular of the many garden parties held in honour of the visit of the Association was that given on Tuesday, July 28th, by Mr. and Mrs. William Walters at their delightful residence overlooking the Bay of Swansea at Ffynone. Though the weather was somewhat unpropitious the lovely grounds were thronged with visitors who admired the many beautiful views to be seen from the well-kept lawns. On Wednesday and Thursday excursions were arranged to the Towy Valley, Bishopstown Valley, Caswell Bay, Oystermouth Castle, and Clyne Castle, while cricket and golf matches were also arranged, but the weather dislocated nearly all plans.

The want of sufficient accommodation in Swansea, owing partly to the clashing of the assizes with the meeting of the

British Medical Association, has been partly met by the formation of a camp on a beautiful site a little beyond the Mumbles. 13 members of the Association availed themselves of this opportunity of enjoying fresh air and each was provided with a tent to himself. The general arrangements of the encampment were on the lines of an officers' mess. The occupants of the tents were made honorary members of the local yacht club and had a thoroughly enjoyable experience, the splendid view of the surrounding country and the general feeling of independence and freedom compensating them for the inclemency of the elements. The success of this effort to solve the housing question was largely due to the kindness and courtesy of Captain Thomas of the local volunteers, and the example furnished might well be imitated on future occasions when the Association is holding its meeting in a town of limited accommodation.

The usual service took place on Tuesday at the parish church. The church was fairly well filled and the Mayor and corporation attended in state. The sermon was preached by the Lord Bishop of St. David's from the text, "Christ also suffered" (St. Peter ii., 21), and the alms were, as usual, divided between Epsom College and the British Medical Benevolent Fund.

Much praise is due to Mr. Guy Elliston, the general secretary of the Association, for his untiring energy to promote the smooth working of the machinery of this the first annual meeting over which he has had undivided business control. Our thanks are also due to him and to his staff for their kindness to our representatives in many directions.

For the accommodation afforded to our staff at Swansea we tender our thanks to Mr. Ebenezer Davies, the medical officer of health, who very kindly placed his offices at our disposal and rendered us much assistance thereby.

The seventy-second annual meeting of the Association will be held at Oxford in 1904, Dr. William Collier, senior physician of the Radcliffe Infirmary, being nominated as President-elect.

THE GENERAL MEETINGS.

THE FIRST GENERAL MEETING.

The First General Meeting was held in the King's Hall on July 28th at 2 P.M.

The retiring President, Mr. WALTER WHITEHEAD, took the chair and introduced the President-elect, Dr. Thomas Dryslwyn Griffiths, late physician to the Swansea Infirmary and ophthalmic surgeon to the Swansea Hospital.

Dr. GRIFFITHS then took the chair and the official badge was presented to him by Mr. W. F. Brook, one of the local honorary secretaries. After thanking the Association for electing him to his high office, he remarked that his first official duty was a most pleasing one—to announce that His Royal Highness the Prince of Wales had consented to accept the honorary membership of the Association. He had therefore much pleasure in moving:—

That His Royal Highness the Prince of Wales be and is hereby elected an honorary member of the British Medical Association, not only for the honour his membership will confer on the Association, but for the distinguished services his Royal Highness has rendered to the medical profession.

The President of the Council, Mr. ANDREW CLARK, seconded the motion, which was carried with acclamation, the audience rising and singing "God bless the Prince of Wales," Dr. S. Cromwell Jones singing the solo.

Dr. G. B. FERGUSON, in a well-chosen speech, proposed a vote of thanks to the retiring President, Mr. Whitehead, which was unanimously agreed to, as was also the proposition that he should be elected a vice-president for life.

Mr. WHITEHEAD, in replying, expressed his gratification for the honour conferred on him and as an encouragement to the President for the year he would say that his year of office had been one of the most pleasant of his life.

The PRESIDENT then vacated the chair in favour of the chairman of the Council and the financial statement was submitted to the meeting by the treasurer, Dr. E. M. SKERRITT. A breezy discussion ensued, Dr. ROBERT BELL taking exception to the meagreness of detail offered to the members in the accounts. He wanted to see more profit out of a revenue of £40,000.

The speaker was interrupted repeatedly in the course of his remarks and the meeting clearly did not appreciate his views. Several members defended the Council and the treasurer made an effective reply, after which the financial statement was adopted.

Dr. H. W. LANGLEY BROWNE proposed that a grant of £300 should be added to the nucleus of £500 which already existed to form a superannuation fund for the office staff when overtaken by age or sickness, which, after some discussion *pro* and *con*, was agreed to.

The meeting was then adjourned.

THE (ADJOURNED) FIRST GENERAL MEETING.

The adjourned first general meeting took place in the evening at the Albert Hall, which was well filled by the members, while many guests were present, including a large number of ladies. The platform was tastefully decorated and the Morriston Male Voice Party sang several pieces. The Mayor of Swansea (Mr. Griffith Thomas) welcomed the members of the British Medical Association to the town and introduced the new President.

The PRESIDENT then announced that the Prince of Wales had that afternoon been elected an honorary member of the Association and read a telegram which he had received from His Royal Highness, which was as follows:—

In thanking you for your kind telegram I beg to convey to the Association my appreciation of the resolution passed to-day. I feel very proud to have been elected an honorary member and I wish the British Medical Association all prosperity.—GEORGE.

The Stewart prize was then presented to Dr. F. W. Mott for his researches into the causes and prevention of dysentery in asylums and the reception of foreign and colonial guests followed.

Dr. GRIFFITHS then delivered his Presidential address which we publish at p. 281. Votes of thanks to the President and to the Mayor of Swansea concluded the proceedings.

THE SECOND GENERAL MEETING.

The second general meeting was held in the King's Hall on July 29th. The proceedings only lasted a few minutes and consisted in the announcement that the meeting of 1904 would be held at Oxford and that Dr. William Collier would be the President.

THE SECTIONS.

MEDICINE.

WEDNESDAY, JULY 29TH.

Medical Treatment of Inflammations in the Cæcal Region.

After a few introductory remarks by Dr. C. T. VACHELL (Cardiff), one of the vice-presidents of the section who occupied the chair, a discussion on the above subject was opened by Dr. P. M. CHAPMAN (Hereford). In cases of appendicitis, he remarked, the question of surgical interference was a very important one, and in Dr. Chapman's view surgical measures were to be avoided if possible. The main responsibility for the treatment of cases of appendicitis rested primarily with the physician and many of these patients recovered by expectant treatment. He had met with several cases in which abdominal explorations had been attended with disastrous results. He tendered an apology for the brevity of his remarks owing to the shortness of the notice which he had received.

Dr. H. W. KING (Chester) wished to confirm the views expressed by Dr. Chapman. Many cases would do much better with hot fomentations, aperients, and small doses of opium. Belladonna and hyoscyamus sometimes promoted the action of the bowels.

Dr. T. D. SAVILL (London) thought that a large number of cases of appendicitis and other inflammations in or around the cæcum were preceded by chronic catarrhal colitis, as distinct from membranous or ulcerative colitis, and important preventive measures might be adopted by the recognition and treatment of this form of colitis. The mucus in the stools was apt to be overlooked by the patient and his medical man and these patients sometimes came under notice for neurasthenia, malaise, or malnutrition of indeterminate origin. The treatment consisted mainly of regulated diet, the administration of intestinal antiseptics, and lavage of the large bowel.

Dr. WILLIAM COLLIER (Oxford) also remarked that more attention might be devoted to the intestinal conditions which preceded appendicitis. He referred to a case which he had recently seen in which operation was delayed with advantage. He doubted whether surgeons saw the early cases of appendicitis attended with mild symptoms which general practitioners met with so largely. He thought that more lives had been saved by early operation than had formerly been lost by delayed operation, but amongst the disadvantages of operation were secondary herniæ and pain in the region of the cicatrix.

Dr. MICHAEL GEORGE FOSTER (San Remo) recalled the contention of M. Dieulafoy that membranous colitis rarely lead to appendicitis, but he (Dr. Foster) had watched about 30 cases of the first-named disease and in four of them appendicitis had subsequently developed, Such a high percentage rather favoured the view that it was not uncommon for the morbid process to extend from the colon to the appendix. With regard to the treatment of membranous colitis, he wished to emphasise the value of a large quantity of solid and simple food. Vegetables should always be given in the form of a *purée*.

Dr. R. SAUNDBY (Birmingham) referred to a case under his care some years age of relapsing appendicitis which had been operated on in the third attack, the appendix, however, not being removed. The patient died and for some years he (Dr. Saundby) had hesitated to call in a surgeon, but in later years, as knowledge advanced and surgeons become more accustomed to the operation, he had adopted more enlightened views. A patient should not be allowed to go without operation who presented a chronic inflammatory induration in the right iliac fossa or who had repeated relapses.

Dr. W. J. TYSON (Folkestone) thought that the subject of the treatment of appendicitis belonged to both physicians and surgeons, but in the early phases of the disease it was undoubtedly medical.

Dr. A. MCPHEDRAN (Toronto), referring to the treatment of appendicitis, thought that the application of leeches was a good procedure. The diagnosis was often very difficult and he referred to the value of leucocytosis as an evidence of suppuration.

Mr. C. R. STRATON (Wilton) and Dr. WILLIAM ODELL (Torquay) also spoke.

Dr. CHAPMAN gave a demonstration of the instrument used by him for obtaining simultaneous heart and pulse (index) tracings.

Dr. WILFRED J. HARRIS (London) and Mr. V. W. LOW (London) made a communication on

The Treatment by Operation of Erb's Palsy, Traumatic Paralysis of the Upper Extremity, and Infantile Paralysis by Cross-union of the Nerve Trunks.

Since Erb in 1874 described in adults the paralysis of the deltoid, the infraspinatus, the biceps, the brachialis anticus, and the supinators, previously described in newly-born children by Duchenne as "obstetrical paralysis," there had always been some uncertainty as to the exact localisation of the lesion. Erb himself first ascribed the condition to a traumatic lesion of the sixth cervical root, but since the experiments of Ferrier and Yeo on the brachial plexus in the monkey in 1883 this form of paralysis has usually been ascribed to a lesion of the combined fifth and sixth trunks. This the authors believed to be an error resulting from an assumption that the brachial plexus of the monkey is identical with that of man. During the last 12 months Dr. Harris had had under treatment two very complete and remarkable cases of this palsy, one traumatic, the other occurring spontaneously, but resembling each other in almost every detail. In each case the paralysis and wasting had been complete, with no attempt at recovery of the deltoid, spinati, teres minor, biceps, brachialis anticus, coracobrachialis, supinatores longus and brevis, pronator radii teres, and extensores carpi radialis longior and brevior. Feeling convinced by previous clinical experience and by a study of the writings of Thorburn and of Sherrington that the sixth cervical root was not involved in these cases, and that the lesion was probably confined to the fifth root, Dr. Harris undertook some dissections and experimental stimulation of the brachial plexus in monkeys and found that it was possible by carefully splitting the roots and following the fibres to the muscles that the spinati, the deltoid, the biceps, and the brachialis anticus and supinator longus were in large part supplied by the fifth root. Experimental stimulation confirmed this result in *rhesus*, and it therefore seemed feasible that an operation might benefit the two patients spoken of by exposing the fifth, sixth, and seventh roots in the neck, isolating and stimulating each faradically, and thereby determining whether one or both of the fifth and sixth roots were affected and if one only to divide it and to sew the distal end of the root into the seventh root in the hope of a down-growth of motor nerves into the paralysed root, similar in plan to the cross-union of nerves for facial paralysis which had been successfully performed. This had been done in both the patients, in one the distal end of the fifth root being sewn into the seventh root, and in the other, the traumatic case, the distal end of the fifth root was sewn into the sixth root. The conditions found at the operations and the results of faradic stimulation of the roots were carefully noted and fully confirmed the opinion that Erb's palsy was due to a lesion of the fifth root alone. In the traumatic case before the operation there were comparative anæsthesia and subjective numbness over the whole of the thumb and the outer side of the index finger, dating from the time of the fall on to the shoulder. This rapidly improved after the operation, disappearing entirely within a week, the improvement being probably due to the sixth root having been freed and cleaned from the scar tissue. No motor improvement had yet occurred in either case, nor was it to be expected for many weeks, six weeks only having elapsed since the first operation. Applying the same reasoning to infantile paralysis (acute anterior poliomyelitis), since it is fully proved that the cord segments corresponded exactly to their respective motor roots, it had occurred to Dr. Harris that an operation on the fifth root might also be beneficial. This was accordingly done in a case of infantile paralysis of four months standing in a little girl, aged two years, the muscles affected being the deltoid and the supra- and infra-spinatus, while the biceps and all the other muscles were normal. At the operation the fifth root was split longitudinally in halves and it was found by faradic stimulation of the two halves separately that the upper half supplied the deltoid, while the biceps was supplied by the lower half. The upper half of the fifth root was then cut across and its distal end turned over and sutured into the sixth root. Uneventful recovery from the operation followed but it was still too early to expect any motor improvement.

Dr. R. LORD (London) read a paper entitled "Personal Reflections on the Treatment of Disease by Antitoxins, Toxins, and Vaccines, together with other uses of Serumtherapy."

SURGERY.

WEDNESDAY, JULY 29TH.

A discussion on

Intra-Abdominal Anastomosis

was opened by Mr. G. H. MAKINS (London) who commenced by pointing out that statistics based on the earlier records of intestinal anastomosis were at the present time practically valueless and misleading, for so much advance had recently occurred that the results of a few years ago were not to be compared with those obtained at present. He continued: There are three methods of joining intestine—namely, (1) axial or end-to-end, (2) lateral anastomosis, and (3) lateral implantation. Axial anastomosis should be limited to cases where the bowel is invested with a complete peritoneal covering and provided with a free mesentery, so that the intestine can be moved sufficiently to allow the anastomosis to be carried out, while lateral anastomosis is applicable everywhere except at the junction of the sigmoid flexure and rectum. In favour of the axial method it may be said that when it heals thoroughly the result is very good and only one joint has to be made, but against it it may be said that the nutrition of the junction is not good for the vessels have to be divided where they are large and thus the union may not

be so firm and the risk of leakage is greater. It is true that in the vast majority of cases in which leakage occurs it is very slight and only gives rise to a little local inflammatory exudation around the junction, but even this would tend to retard recovery. In favour of lateral anastomosis it might be pointed out that this is the "natural" way in which an anastomosis occurs in disease, as in "vicarious communications" between two portions of bowel. The advantages of lateral anastomosis are: (1) that it approximates two plane surfaces of intestine instead of corrugated surfaces as in end-to-end union; (2) the size of the opening can be made as large as is necessary so that there is no risk of cicatricial contraction; (3) it is possible to avoid completely the mesenteric border and thus the intestinal vessels are only divided where they are small; and (4) it is possible to avoid the field of disease without removing too large a portion of bowel as in necrosis of the bowel after strangulation. Moreover, when leakage does occur after lateral anastomosis it is almost always at the blind end of the bowel. Lateral implantation is chiefly applicable to cases where it is desired to unite a piece of bowel of small lumen to one much larger, as in union of the ileum to the ascending colon. Mr. Makins here quoted statistics bearing on these points. At St. Thomas's Hospital the mortality of all the cases of axial union was 53 per cent., but on the other hand Littlewood had performed 11 enterectomies for carcinoma of the large bowel and the death-rate was under 28 per cent. Von Eiselsberg had 12 cases of resection for intussusception and in these cases union was by axial anastomosis and the mortality was 25 per cent. Mr. Makins proceeded: It must not be forgotten that the mere method of uniting the intestine is not the only thing of the greatest importance to preserve the wound free from contamination. This is accomplished by careful clamping of the intestine on each side of the field of operation. I consider that Doyen's is the best intestinal clamp. It is important to determine the amount of mesentery to be removed; this will depend on the cause of the enterectomy. In cases of gangrene the amount of gangrenous bowel determines the amount of mesentery needing removal, but if a new growth is to be excised the degree to which the mesentery is diseased will determine the extent of bowel to be excised. It is best to remove the mesentery first before the bowel is incised. Folding of the mesentery is done most commonly in strangulated bowel but it is not always safe, as the veins may be the seat of a septic thrombosis. Two tiers of sutures should always be employed, the inner including chiefly the mucous membrane and the outer only the serous layer and a portion of the muscular coat. The simpler the method of suture the better and the simple continuous method is the best. Murphy's button is theoretically very good, but the practical objections are great. Oblique section of the bowel has been tried, but where it is sutured there is apt to be a kink. Should any excessive mucous membrane be present it is better to remove it, as it tends to form a "diaphragm."

Mr. E. STANMORE BISHOP (Manchester) also contributed a paper to the discussion. He commenced by making the suggestion that the portion of the circumference of bowel most distant from the mesentery should be called the "fundal" point or line, agreeably to the analogous use of the word "fundus" in the description of the uterus and bladder. Mr. Bishop's opinion on intestinal anastomosis was founded mainly on 22 cases, most of which were connected with hernia. In one of these cases a portion of gangrenous bowel was excised and the ends were united by a Czerny-Lembert suture, yet a "diaphragm" formed and this becoming œdematous caused fatal obstruction. In Mr. Bishop's opinion the question of the value of mechanical assistance was closely associated with the question of the portion of bowel to be dealt with. If the anastomosis were in the upper part of the small bowel or the stomach the contents were liquid and could exert a dissolving action on a decalcified bone bobbin, but lower down the intestine the contents were more solid and had less dissolving power; therefore absorbable appliances were more suitable in the upper portion of the bowel. Some dough bobbins were shown and bone "couplers" devised by Frank of Chicago were exhibited. Mr. Bishop proceeded to discuss various other mechanical appliances which had been employed for intestinal anastomosis, such as O'Hare, Vidal, and Doyen forceps, and he described other methods of suture. He thought that there was no reason why the inner suture should not perforate the whole thickness of the bowel wall.

Mr. JORDAN LLOYD (Birmingham) claimed that in intestinal anastomosis simplicity was the most important point; he himself employed common sewing needles and common silk (of course carefully sterilised). He considered that many mechanical appliances were very dangerous. It was true that simple suture took a little more time than the employment of a mechanical appliance but the difference was only slight. It was important that the abdominal wound should be sufficiently large to permit of easy manipulation. In his opinion the chief danger was hæmorrhage. On the whole, lateral anastomosis should always be done when circumstances permitted.

Mr. E. DEANESLY (Wolverhampton) maintained that lateral anastomosis was not so natural as the end-to-end form, for in those rare cases of intussusception where recovery followed sloughing of the gut the bowel united by axial anastomosis. He approved of the use of two tiers of sutures, the inner going through all the coats. No mechanical appliance need be employed, needles and silk only being required. In every case a "diaphragm" must form, but it only became excessive when too much oft he bowel was turned in.

Mr. R. C. ELSWORTH (Swansea) mentioned that in his last six cases of intestinal anastomosis he had used Murphy's button and all had recovered. He considered that most of the fatal cases in which the button was used were due to the method employed. The parts of the button should be pressed together as firmly as possible and it was as well to add a few external stitches.

Mr. J. BASIL HALL (Bradford) formerly employed the bone bobbin, but now he used simple suture, the inner suture of catgut, passing through all the coats, and the outer of silk.

Mr. G. G. HAMILTON (Liverpool) had tried the Murphy button and, indeed, he employed successfully a one and a half button in two cases of colectomy, but now he used nothing but the simple suture.

Mr. SINCLAIR WHITE (Sheffield) considered that by ligaturing the mesentery first he obviated the risk of hæmorrhage. He had had many successful cases of enterostomy in which he employed Murphy's button, but in five of the cases he never saw the button again. He favoured simple continuous suture.

Mr. A. B. MITCHELL (Belfast) spoke strongly in favour of two tiers of simple continuous suture, the inner one passing through all the coats and the outer through the serous, the muscular, and the submucous coats. In lateral implantation the incision into the bowel should be transverse.

Mr. A. W. MAYO ROBSON (London) declared that he was in favour of union by suture but that he had found much assistance from the support of the bobbins which he had devised. He considered Murphy's button to be distinctly harmful, for the surgeon could never be certain what would happen.

Mr. W. H. HORROCKS (Bradford) related a case of malignant disease of the bowel in which he removed 36 inches of gut and then invaginated the lower portion of the bowel into the upper and fixed it there with sutures. The case did very well.

Mr. F. F. BURGHARD (London) considered that the "diaphragm" which sometimes appeared after end-to-end anastomosis was due to turning in too much of the bowel by means of the external sutures. He thought the material of which the suture was composed to be a matter of very slight importance.

Mr. EDMUND OWEN (the President of the section) expressed the pleasure which he had derived from the discussion. He noticed that no one had spoken of the need of sewing up the triangular interval in the mesentery; he thought that attention to this point was of great importance.

Mr. MAKINS and Mr. BISHOP replied.

OBSTETRICS AND GYNÆCOLOGY.

WEDNESDAY, JULY 29TH.

Professor W. STEPHENSON (Aberdeen), the President, gave a short introductory address on

The Trend of Opinion in Obstetrics.

He remarked that those whose student days, like his own, dated back 40 years or more, were conscious of great advance in the science, and many changes in the practice, of obstetrics. Gynæcology as a special branch was unknown then. The younger generation of to-day could not realise the wonder which a successful case of ovariotomy then excited or the dread of opening the peritoneal sac. Similarly the use of the forceps was at first contemplated

with something like alarm by the generality of the profession. A change of wide influence in the sphere of obstetrics in the present day was the freer acceptance of the principle of interference as contrasted with the opposite principle so strongly inculcated in former days. Such interference was not a question for experts alone; it lay largely within the sphere of the general practitioner. In gynæcology, too, it was essential that the practitioner should have the necessary amount of knowledge which would enable him to recognise the gravity of a given condition and when the services of the specialist should be enlisted. In midwifery in the majority of cases he (the practitioner) himself must also be the operator, for the danger often arose so suddenly and with so little warning that there was no time to summon assistance. This had a decided bearing on the length of time which in the medical curriculum was devoted to the acquisition of such requisite knowledge and also on the methods by which it was sought to impart that knowledge. A deficiency in our text-books was the discussion as to how and when aid should be extended. The mere number of cases attended before presenting himself for examination was no estimate of a man's knowledge of midwifery. Nor yet, on the other hand, should too much reliance be placed on the mere acquaintance with text-books. There was much to be said for the good effect of lectures, systematic and clinical, quickened as they were by the living voice and illumined by the personality and experience of the teacher. His (the speaker's) experience was that the 100 lectures customary in the Scottish Universities were inadequate to overtake the subject, and now in Aberdeen the number of hours was increased by a half more and the time over which the study of the subject extended had been doubled. By means of the cadaver and models the practical study of the anatomy of the pelvic organs, the methods of examination, the mechanism of labour, and the diagnosis of the lie of the fœtal head, as well as the delivery of breech cases and the application of forceps, were all usefully and helpfully studied. Such a class should be made compulsory in all the schools, without of course superseding the attendance on midwifery cases. Whilst in a sense gynæcology and obstetrics were distinct, they had, nevertheless, so much in common and were so wedded together in actual practice that it was not good they should be put asunder. Strictly speaking, in its etymology the term "gynæcology" would include pregnancy and labour. The subjects which would presently be discussed in this section would illustrate the fact that medicine, surgery, and midwifery must all be brought into action in the solution of many of the difficult problems of gynæcology and obstetrics.

Dr. AMAND ROUTH (London) opened a discussion on

The Management of Pregnancy Complicated with Uterine Fibroids.

The object of this discussion was to eliminate methods of treatment which could now safely be abandoned and to indicate the best modern methods. 1. With regard to the effect of pregnancy upon the fibroids, he was of opinion that in those cases where rapid increase of size had been recorded there was nothing to show that it was the fibroid itself which had undergone such increase. Whitridge Williams thought the increase of size was due more to œdema than to actual hypertrophy. Fibroids might diminish in size or even disappear during involution. It was probable that softening during pregnancy must precede absorption afterwards. Playfair in 1877 had recorded a case of almost complete disappearance of a large fibroid which increased again rapidly at the next pregnancy. Intra-mural fibroids tended to become driven outwards during involution and become more definitely subserous. Degeneration and extrusion of submucous fibroids might occur after labour, especially if the labour had been prolonged. Such a fibroid might be expelled from the uterus without serious consequences, but usually in process of extrusion the circulation of the fibroid became arrested and sloughing ensued with sapræmia or septicæmia and death if the expulsion of the polyp did not occur. A case illustrating this was quoted in which life might have been saved had hysterectomy been performed when sepsis had declared itself. Fibroids might become infected during the puerperium and the softening effect of pregnancy rendered them most liable to infection. Such an infection at term, though rarer, was more serious than that following abortion. 2. With respect to the effect of fibroids upon a co-existing pregnancy, the question arose as to whether fibroids caused sterility, and in estimating this point it must be remembered that these tumours were most common at an age when pregnancy was naturally less frequent. In reviewing the facts it seemed to him (the speaker) to be probable that fibroids are by no means a frequent cause of sterility and it was possible that Mann's view, that sterility was a cause of fibroid, was truer. Whitridge Williams showed that the sterility is due mainly to endometric changes, to fibroid, or to altered relations of ovaries and Fallopian tubes. Fibroids probably did not predispose to abortion or premature labour, although labour may come on a week or two before full term. A table was shown illustrating this point. Fibromyomata certainly did cause fœtal mal-presentation and whilst delay in labour with fibroids was the rule there was no marked tendency to inertia. On the other hand, there was a decided predisposition to post-partum hæmorrhage in these cases and in not a few instances this was due to the association of adherent placenta, which, though sometimes pathological, was most often physiological, and the manual removal necessitated by that condition. A very serious question arose when the physician was consulted at the fourth or fifth month or later as to whether a complicating fibroid would interfere with labour. The fibroid might appear to render the passage of a child at or near term impossible and yet a definite opinion might be formed that the tumour would be lifted up out of the pelvis by the steady growth of the uterus. Mann had recorded a case where such an elevation of the tumour had occurred in the second stage. When this occurred the cervix resumed more or less its normal position. Nature has often succeeded in the removal of an obstruction which repeated attempts by the accoucheur had failed to encompass. Retro-uterine fibroids might become adherent in the floor of the pelvis and become as immovable as intra-ligamentous tumours. Cervical fibroids were the most obstructive of all and, like the intra-ligamentous variety, could not be lifted out of the pubes or pushed up from below. In the puerperium involution was retarded but not impaired. The real danger at this stage was sepsis from decomposition of retained portions of placenta, and this readily affected the fibroids. As regards treatment, if the patient were first seen before fœtal viability and if obstruction appeared probable attempts to elevate the pelvic fibroid might be made by gentle digital or hydrostatic pressure in the Sim's or knee-chest position, forcible attempts being avoided. Failing success an attempt might be made under A.C.E. mixture. The raising of the foot of the bed was a useful aid. All writers were agreed that induction of abortion for this condition should be abandoned. This latter procedure was difficult if the os were nearly out of reach and even if the cervix could be satisfactorily dilated, the distended uterine cavity rendered complete removal of the placenta difficult. In fact, the easier it was to induce abortion the less necessary was it to interfere at all. Induction then left the woman with a fibroid and did nothing towards enabling her to have a living child in the future. An expectant attitude should be adopted. The existing pregnancy might be the only chance of the woman having a living child and therefore every opportunity should be afforded her of going to full term. Myomectomy before fœtal viability was now the ideal indication when pressure symptoms developed before fœtal viability and it had the advantage that if necessary hysterectomy might be effected. Hysterectomy before fœtal viability was required after incomplete abortion where hæmorrhage or sepsis was present. If the patient were first seen after fœtal viability expectant treatment should here again be adopted if the mother's life were not endangered. Reposition might be tried even up to full term. One thing was certain, a high degree of danger was associated with attempts to deliver by forceps, version, or embryotomy. Vaginal enucleation might be indicated in place of pan-hysterectomy where the fibroid was situated in the cervix. But in all other cases of obstructing fibroid abdominal section should be employed and the child delivered by Cæsarean section. Thereafter a number of procedures presented themselves for differential consideration. To proceed no further than the Cæsarean section would rarely be right. Recorded results did not testify that bilateral oöphorectomy would be followed by atrophy of the fibroid. Myomectomy was sometimes indicated after the Cæsarean section. When abdominal hysterectomy was performed preference should be given to the supra-vaginal operation with retro-peritoneal treatment of the stump by Baer's or Chrobak's methods. If pan-hysterectomy were indicated Doyen's method was the best and one ovary at

least (if healthy) should be retained. If during the puerperium fibroids became infected from uterine sepsis, panhysterectomy should be carried out forthwith.

Dr. HEYWOOD SMITH (London) advocated that in view of all the risks associated with pregnancy complicated by uterine fibroids women who had fibroids should be advised not to marry. He was not in favour of myomectomy, as he thought small nodules might be overlooked at the time of operation and might give rise to trouble subsequently. He preferred subperitoneal hysterectomy and did not think the small stump left after that operation would give rise to any complications later.

Professor MURDOCH CAMERON (Glasgow) thought that the apparent growth of a fibroid during pregnancy was due for the most part to an enormous growth of the surrounding muscular tissue which diminished subsequently to labour. One cause of the degeneration of the sub serous fibroids was the syphoning of the vessels at delivery. Sterility was the rule. He placed no value on statistics as a guide to treatment as in too many cases the pregnancy had only been found as a complication, whereas what they had to deal with in this disease was the fibroid as a complication to pregnancy.

Mr. ANDREW HORNE (Dublin) said that œdema was the cause of the increase in size of the tumour during pregnancy. Fibroid did not *per se* cause sterility. He was in favour of expectant treatment whenever possible until term and then consideration could decide the method of treatment.

Mr. J. A. RAWLINGS (Swansea) related a case where he was convinced a multinodular fibroid had atrophied within a few weeks after labour.

Dr. T. W. EDEN (London) was unable to agree with Dr. Heywood Smith that he ought to advise a woman with uterine fibroids not to marry. His experience in a particular case had been that the patient might pursue a normal course in pregnancy, labour, and puerperium and the fibroid return to its previous dimensions.

Dr. FREDERICK EDGE (Wolverhampton) considered that the endometric changes with the dislocation of the tubes and ovaries contributed to the sterility. Unless the fibroid was cervical and fixed it was well to leave the pregnancy to its natural ending.

Dr. EWEN J. MACLEAN (Cardiff) cited a case which had been under his care where a fibroid in the right broad ligament had rendered the cervix almost out of reach. With the advance of the pregnancy, however, the fibroid became raised out of the pelvis, the cervix became central, and a natural labour and puerperium followed.

Mr. R. NELSON JONES (Swansea) agreed that the situation of the fibroid was the important point.

Dr. J. LAMOND LACKIE (Edinburgh) narrated a case in which during labour spontaneous elevation of a fibroid tumour from the pouch of Douglas occurred. After delivery of the fœtus the fibroid again pressed into the pelvis.

Dr. ROUTH replied.

Dr. C. E. PURSLOW (Birmingham) read a paper on a case of Persistence of the Uro-genital Sinus.

Dr. F. W. N. HAULTAIN (Edinburgh) and Dr. T. A. HELME (Manchester) also joined in the discussion and we hope to refer to their remarks in our next issue.

PSYCHOLOGICAL MEDICINE.

WEDNESDAY, JULY 29TH.

The Presidential Address was given by Dr. R. JONES, medical superintendent of the London County Asylum, Claybury, who dealt with the subject of the

Development of Insanity in Regard to Civilisation.

He pointed out that various factors and conditions, both of external origin and of internal (or hereditary) derivation contributed to increase the ratio of insanity to soundness of mind in civilised comunities and the possible methods of combating the sources of these factors in the production of insanity were discussed.

Dr. W. F. ROBERTSON, pathologist to the Scottish Asylums, read a paper and gave a lantern demonstration on the Pathology of General Paralysis of the Insane, pointing out that a special diphtheroid bacillus was in all probability the cause of this disease. This paper was discussed by the PRESIDENT, Dr. EDWIN GOODALL (Carmarthen), Dr. MAULE SMITH, Dr. T. B. HYSLOP (London), Dr. F. W. MOTT (London), Dr. DAVID YELLOWLEES (Glasgow), Dr. F. EDRIDGE-GREEN (London), Dr. W. LLOYD ANDRIEZEN (London), Professor ADAMI (Montreal), and Professor HAMILTON (Aberdeen.)

Dr. R. G. ROWS (Whittingham) read a paper, accompanied by a lantern demonstration, on Cavities in the Spinal Cord.

PATHOLOGY.

WEDNESDAY, JULY 29TH.

The proceedings opened with an Address by the PRESIDENT, Professor D. J. HAMILTON (Aberdeen), on the

Inoculability of Human Tuberculosis upon Bovines,

in the course of which he replied to criticisms which had been passed on a paper written by Professor J. H. Young and himself on the same subject. In the discussion which followed Dr. NATHAN RAW (Liverpool) expressed the opinion that the organisms of human and bovine tuberculosis were two species of one bacillus.

Dr. G. L. EASTES (London), one of the secretaries of the Section, read a paper by Dr. E. Michels and Dr. F. Parkes Weber on Two Cases of Obliterative Arteritis in Young Men, leading to Gangrene in the Extremities, in illustration of which the bones of a foot and some microscopic slides were shown in the Pathological Museum.

Professor T. OLIVER (Newcastle-on-Tyne) opened a discussion on Miner's Phthisis, with special reference to the pathology of the disease, and pointed out that the affection was a disease of occupation and was not tuberculous.

Professor J. G. ADAMI (Montreal), and Professor HAMILTON took part in the discussion and Professor OLIVER replied.

OPHTHALMOLOGY.

WEDNESDAY, JULY 29TH.

The PRESIDENT, Mr. H. E. JULER (London), after a few preliminary remarks called on Mr. A. STANFORD MORTON (London) to open a discussion on

The Operative Treatment of Conical Cornea.

Mr. Morton presented a most exhaustive analysis of cases which had been under his care and explained his conclusions thereon.

Mr. J. TATHAM THOMPSON (Cardiff), Dr. KARL GROSSMANN (Liverpool), Mr. R. WILLIAMS (Liverpool), Dr. R. W. DOYNE (Oxford), and the PRESIDENT also spoke, after which Mr. MORTON replied.

Papers were read by Major H. SMITH, I.M.S., on Extraction of Cataract in its Capsule, and by Dr. A. DARIER (Paris) on Sub-conjunctival Injection of Koch's Tuberculin (T. R.) in a Case of Interstitial Keratitis of Tuberculous Nature.

DISEASES OF CHILDREN.

WEDNESDAY, JULY 29TH.

Mr. W. ARBUTHNOT LANE (London) presided.

Dr. D. B. LEES (London) opened a discussion on

The Pathology and Treatment of Chorea.

Referring to the inadequateness and incorrectness of the term "chorea," he said he believed that the affection was probably a toxæmia which had a close connexion with that of true rheumatism, and for the same reason he considered that salicylates, at any rate in acute cases, were a specific remedy.

Dr. H. ASHBY (Manchester), Dr. THEODORE FISHER (Bristol), Dr. W. EWART (London), Dr. G. J. CRAWFORD THOMSON (London), Dr. F. J. POYNTON (London), and Dr. E. CAUTLEY (London) took part in the discussion.

Dr. M. O'SULLIVAN (Dublin) read a paper on Chorea, its Complications, Course, and Treatment. Dr. G. CARPENTER (London) and Dr. J. R. LOGAN (Liverpool) made some remarks, and Dr. LEES briefly replied.

Professor RUBRAH (Baltimore) read a paper on the Relation of the Thymus Gland to Marasmus.

Dr. POYNTON, Dr. ASHBY, Dr. LEES, Dr. CARPENTER, Dr. R. B. MCVITTIE (Dublin), Dr. FISHER, Dr. LOGAN, and Dr. C. PINKERTON (Southport) took part in the discussion which followed.

Mr. R. W. MURRAY (Liverpool) read a paper on a Note on the Age for Operating in Cleft Palate, which was discussed by the PRESIDENT, Dr. A. GARROD THOMAS, Dr. ASHBY, and Dr. POYNTON.

LARYNGOLOGY AND OTOLOGY.

WEDNESDAY, JULY 29TH.

Dr. PATRICK WATSON WILLIAMS, the President (Clifton), was in the chair.

A discussion on the Operative Treatment for Malignant Disease of the Larynx was opened by Sir FELIX SEMON

(London). Dr. E. J. Moure (Bordeaux) was unfortunately prevented from being present to take part in the introduction of the subject.

Professor GLUCK (Berlin) read a paper dealing mainly with Partial and Total Extirpation of the Larynx and demonstrated preparations, artificial larynges, and patients who had been cured by the operation.

Dr. H. TILLEY (London), Dr. W. JOBSON HORNE (London), and Mr. R. H. WOODS (Dublin) continued the discussion.

Dr. EUGENE S. YONGE (Edinburgh) read a paper on Two Cases of Epithelioma of the Larynx remaining well Two Years after Operation (Thyrotomy).

The discussion was resumed by Dr. J. DUNDAS GRANT (London) and Mr. C. P. CHILDE (Portsmouth).

The PRESIDENT congratulated the Section on the value and importance of the discussion and Sir FELIX SEMON and Professor GLUCK replied.

NAVY, ARMY, AND AMBULANCE.

WEDNESDAY, JULY 29TH.

The business of the Section commenced with the election of Fleet-Surgeon LLOYD THOMAS, R.N., to the post of chairman.

A paper by Staff-Surgeon T. FALCONER HALL, M.B., was read describing various methods of rendering water fit for drinking for men on shore service and giving an account of his efforts to carry out some of the methods.

Fleet-Surgeon LLOYD THOMAS, R.N., then described his experiences with the Naval Brigade which formed part of the China Field Force for the relief of the Pekin legations in 1900. He entered into details concerning the cases of sunstroke which occurred and referred to the frequency of bowel complaints, with special emphasis on the purification of the drinking water. He also described the various forms of headgear and boots used by the forces of the allies.

The meeting closed with a paper by Lieutenant-Colonel H. G. HATHAWAY, R.A.M.C., entitled, "Some Notes on a Mounted Bearer Company."

TROPICAL DISEASES.

WEDNESDAY, JULY 29TH.

The proceedings in this section commenced with some introductory remarks by Dr. G. H. F. NUTTALL (Cambridge), the President.

The discussion on the

Disposal of Excreta in the Tropics

was opened by Dr. W. J. R. SIMPSON (London), and papers on the same subject were contributed by Dr. ANDREW DUNCAN (London) and Major LEONARD ROGERS, I.M.S.—In the discussion which ensued the following took part: Dr. H. M. FERNANDO (Ceylon), Fleet Surgeon P. W. BASSETT SMITH, R.N., Sir PATRICK MANSON (London), Dr. F. M. SANDWITH (Cairo), Mr. J. CANTLIE (London), Dr. L. W. SAMBON (London), Captain A. T. W. KING, I.M.S., Major I. PENNY, I.M.S., Dr. C. CHRISTY (Liverpool), and Mr. K. W. GOADBY. The discussion was closed by remarks from the PRESIDENT. Fleet Surgeon BASSETT SMITH, R.N., then read a paper on Sprue, which was also discussed.

Dr. CHRISTY read a paper on the Entry of the Spore into the Red Corpuscle in Malaria.

THE ANNUAL MUSEUM.

The exhibition was held in the public library in Alexandra-road. In the same building was the reception-room, in passing to which the visitors could hardly fail to notice the entrance to the museum. Unfortunately, some persons seemed to conclude that the scope of the exhibition was limited to the ground floor and the attendance there was greater, at any rate on the opening day, than in the rooms on the first and second floors. As a matter of fact, the major portion of the exhibits was displayed on these floors as well as in the corridors outside. The pictures on the walls of the library rooms were allowed to remain and the exhibitors were restrained in regard to displaying advertisements and decorations. In some instances entire rooms were placed at the disposal of an exhibit of surgical and sanitary appliances which happened to need either more space than others or else special accommodation, such as the darkening of the room for the demonstration of electrical apparatus. Here and there were rooms devoted to refreshments or used as a lounge and in these in some cases the statues removed from their accustomed places in the library formed an artistic grouping. On the whole the arrangements succeeded very well, the exhibition proved attractive, and the number of visitors appeared to be larger than is usually the case. The exhibitors seemed pleased with the attendance, while the visitors when feeling tired of druggists' and food specialists' novelties could find relief by turning to the collection of pictures on the walls. In some measure the wet weather on Tuesday was favourable to the success of the annual museum, since it was held in a building situated in the centre of the town and afforded shelter. The subjects of exhibition were of a widely varying character and drugs and special foods did not occupy, as has been usual, the greater share of the space. Surgical and sanitary appliances were decidedly in evidence, while there was an interesting display of apparatus used in electrotherapeutics.

Following our practice in former years we will proceed to describe the more important exhibits with some detail and for that purpose it is convenient to classify them as follows:—I. Drugs; II. Foods and Food Products; III. Sanitary Appliances, Disinfectants, &c.; IV. Surgical Instruments and Appliances; V. Mineral Waters, Beverages, &c.; VI. Publications; and VII. Miscellaneous.

I.—DRUGS.

It must be admitted that without the elegant series of modern pharmaceutical preparations comprising tabloids, tablets, perles, pilules, cachets, capsules, and tinctures, there would be little relief in the *tout ensemble* of the exhibition. Improvements seem still to be directed towards attaining accuracy of dosage and convenience in the form of the various medicaments of the Pharmacopœia. Certainly, synthetics are not now presented in the formidable number which was formerly the rule some years ago. More or less successful attempts have been made to combine new groups with well-known remedies. An example of this was seen in the series of elegant pharmaceutical products exhibited by the Bayer Co., Limited, of Elberfeld, Germany, and 19, St. Dunstan's-hill, London, E.C. We have already described aspirin which has proved an excellent substitute for salicylic acid of which it is an acetyl derivative. Whilst preserving the properties of salicylic acid in the treatment of rheumatism aspirin does not set up disagreeable secondary symptoms. Again, aristochin is the carbonic ester of quinine which, while tasteless, is easily absorbed and is stated to be free from the unpleasant effects which many experience after taking quinine. Lastly may be mentioned theocin, a synthetic alkaloid of the xanthine group which is stated to be a most efficient diuretic and useful in affections of the heart; helmitol, a methyl-amine citrate compound with antiseptic properties useful in cystitis and gonorrhœa; and mesotan, a new derivative of salicylic acid which is suggested as a substitute for wintergreen in the treatment of rheumatic and gouty affections. Messrs. Parke, Davis, and Co., of 111, Queen Victoria-street, London, E.C., divided their exhibit into two stalls, one of which was very favourably situated on the ground floor and the other on the floor above. This firm make a special feature of determining the therapeutic activity of such powerful drugs as strophanthus, digitalis, cannabis indica, ergot, and aconite, by means of physiological tests. Amongst other specimens on their stall we observed the preparations of adrenalin which have been already noticed in our columns, a most powerful hæmostatic and astringent; acetozone, a very powerful germicide, though it may be administered internally with safety; and uretone, a urinary antiseptic derived from formaldehyde and ammonia. A very artistically arranged stall was that of Messrs. Ferris and Co. of Bristol, who showed amongst other things a complete dispensing equipment for a small practice or branch surgery, a selection of vaccination appliances and outfits, a special preparation of bismuth, pearl-coated pills, capsules, and many other excellent forms of medicaments. Messrs. Oppenheimer, Son, and Co. of 179, Queen Victoria-street, London, E.C., had a small but none the less interesting exhibit comprising their well-known palatinoids and bipalatinoids, concentrated liquors, "maglactis" (a cream of hydrate of magnesia), and many other useful and elegant preparations. A great variety of pharmaceutical preparations

and forms of administration was shown on the well-arranged stall of Messrs. Wyleys, Limited, of Coventry. Amongst these may be mentioned the non-alcoholic tinctures prepared with a glycerine basis, fluid extracts, antiseptic pellets, hypodermic pellets, gelatin-coated pills, and a non-acid syrup of the glycerophosphates of lime, soda, potash, magnesia, and iron. Amongst the interesting number of preparations shown by Messrs. Burgoyne, Burbidges, and Co. of 12 and 16, Coleman-street, London, E.C., was "salocreol," a combination of salicylic acid with beechwood tar. It is regarded as, in fact, a salicylic ester of creasote which has been found valuable in erysipelas in the face, in chronic and muscular arthritis, and in lymphadenitis. Specimens of lactate of silver, citrate of silver, and colloidal silver were also shown by this firm. Messrs. C. J. Hewlett and Son of 35-42, Charlotte-street, London, E.C., publish an interesting pamphlet on new remedies and special pharmaceutical preparations, specimens of which for the most part were exhibited at their stall. Amongst the drugs exhibited were heroine, lecithin, urea, and phenolphthalein. They showed in addition a number of antiseptic preparations as well as clinical tests for urinary analysis and the apparatus already noticed in our columns which is designed to facilitate the application of Unna's pastes in skin affections. Antiphlogistine was the feature of the stall of the Denver Chemical Manufacturing Company of New York and 110, Cheapside, London, E.C. As we have already pointed out, antiphlogistine is an undoubted advance on the old-fashioned cataplasm. It is a soothing and perfectly clean application. There is a special preparation exhibited by the Charles H. Phillips Chemical Company of 14, Henrietta-street, Covent-garden, London, W.C., which calls for notice. It is milk of magnesia, an emulsion of pure hydrate of magnesia which is specially valuable as an antacid. We have already pointed out its advantage in our analytical columns. Specimens of ovo-lecithin, the definite organic phosphorous compound obtained, amongst other things, from egg, were exhibited by Billon's Ovo-Lecithin Depôt of 16, Water-lane, Great Tower-street, London, E.C. The favourable results which lecithin appears to give in encouraging cell multiplication should draw attention to the value of this organic phosphorous compound in depressed conditions of nutrition. Local pharmacy was very well represented by Messrs. J. T. Davies and Co. of 13 and 14, Walter-road, Swansea, who, in addition to drugs, showed a large assortment of medical and surgical instruments and cotton-wools, lints, and gauze. Messrs. Philip Harris and Co., Limited, of 144 and 146, Edmund-street, Birmingham, presented an interesting series of pharmaceutical preparations to view, while Messrs. Arthur and Co. of 69, Berners-street, London, W., exhibited their well-known compound of gold, arsenic, and bromine known as bromaurum and a number of other preparations which we have noticed on previous occasions. On the whole it may be said that the drug section was not so well represented as in former years; there were certainly fewer novelties. Latterly, the tendency has been in favour of the number of special foods exhibited predominating over the number of drugs, but this year the food section also was not on a very large scale.

II.—FOODS AND FOOD PRODUCTS.

As already mentioned this section was comparatively limited in scope and the absence of the usual variety of milk foods and milk products was noteworthy. Indeed, most of the food products shown were preparations derived from meat. The British Somatose Co. Limited, of 165, Queen Victoria-street, London, E.C., showed their somatose preparations which have already been described in THE LANCET. Mention may be made in particular of liquid somatose which is a powerful nutrient preparation containing 80 per cent. of beef albumin converted into soluble and uncoagulable proteose. The powdered somatose may be used with great advantage as a nourishing adjuvant to all kinds of foods. The preparations of iron-somatose and milk-somatose are also of interest. We have also described in the analytical records from THE LANCET laboratory the preparations of the Myosin Albumin Meat Extract Company of 107, Strand, London, W.C. Thus mamesin is a preparation of pure myosin albumin containing also the extractives of the meat and the iron and phosphorus in organic combination. Mamesin is a direct nutrient. Marmite resembles beef extract very closely as regards appearance and taste, while it contains albumoses although it is an entirely vegetable extract. It has been used as a nutrient with advantage over meat preparations in gouty and rheumatic conditions. Specimens were shown by the Marmite Food Extract Company, Limited, of 40, Mincing-lane, London, E.C. Vegox, on the other hand, is an extract prepared from both vegetables and beef by Vegox, Limited, of 53, New Broad-street, London, E.C. As we have already pointed out in our analytical columns, Vegox is a highly concentrated preparation of nourishing value and possesses an appetising flavour. Messrs. Cosenza and Co. of 95, Wigmore-street, Cavendish-square, London, W., exhibited Maggi's well-known soups. These included the consommé and tonic bouillon contained in a clear solidified form in capsules, and the "Cross Star" soups which were supplied in large quantities to the troops in South Africa. The Liebig's Extract of Meat Co., Limited, of 4, Lloyd's-avenue, London, E.C., showed specimens of their well-known extract, lemco, as well as oxo, their fluid beef. The latter contains meat fibre as well as the albumins and extractives of beef. A very large assortment of specialities for invalids was exhibited by Messrs. Brand and Co., Limited, of 11, Little Stanhope-street, Mayfair, London, W. Attention may be directed in particular to their nutrient powder and their fever food which is a palatable jelly prepared from beef, eggs, and cream. Bovril, Limited, of 152 to 166, Old-street, City-road, London, E.C., exhibited a large number of foods for invalid and for general use. Amongst these were a number of special rations, besides the many series of food containing bovril. On the same stall were shown specimens of virol which contains an active malt extract associated with red bone marrow, eggs, and lemon juice. We have already alluded to the peculiar value of virol as a reparative. The Aylesbury Dairy Company, Limited, of St. Petersburgh-place, Bayswater, London, W., were the only large milk company represented. They showed specimens of humanised milk, peptonised milk, sterilised milk, and many other milk preparations. Condensed milk was represented by one firm, that of Mr. Henri Nestlé of 48, Cannon-street, London, E.C. Amongst the preparations shown were condensed Swiss milk containing the whole of the cream and a special food for infants and invalids. Messrs. Callard and Co. of 65, Regent-street, London, W., exhibited their starchless and sugarless foods designed chiefly for sufferers from diabetes and obesity. Mention should also be made of the breads and biscuits enriched with casein and of the sugarless marmalade, chocolate, jellies, and starchless flours. There were many interesting food preparations designed for the use of the diabetic and the dyspeptic on the stall of the Cheltine Foods Company, Limited, of Cheltenham. The exhibits included an infants' food, soluble maltose food, and malted milk chocolate. Maltova is an undoubtedly valuable food, consisting of a combination of fresh eggs with malt extract. The preparation was exhibited by Maltova, Limited, of Leeds and London. The preparation has been dealt with in THE LANCET laboratory. Messrs. J. van Abbott and Sons of Baden-place, Crosby-row, Borough, London, S.E., exhibited their well-known food preparations for diabetic patients. We may, in particular, commend the midolia biscuit which has the advantage of being cheap, while its composition is adapted for special requirements. The exhibit included gluten bread and biscuits, soya biscuits, and almond flour. Mellin's Food, Limited, of Stafford-street, Peckham, London, S.E., exhibited their well-known malted food, besides some biscuits and chocolate. Messrs. Broomfield and Co. of 83, Upper Thames-street, London, E.C., exhibited a highly refined vegetable fat called albene, which is recommended for cooking and baking purposes in the place of lard, margarine, and butter. It has the advantage of keeping sweet and does not get rancid. The shredded whole-wheat biscuit and "triscuit" are well known as entire cooked preparations of the wheat berry, showing on analysis a maximum proportion of the nourishing constituents of wheat. These preparations were exhibited by the Shredded Wheat Company of 6 and 8, Eastcheap, London, E.C. Patent groats and patent barley were the subjects of exhibition by Messrs. Keen, Robinson, and Co., Limited, of Garlick-hill, London, E.C. The former is admirable for making a nourishing gruel and the latter, as is well known, serves excellently for diluting cow's milk for infants' use. The only cocoa represented was that of Messrs. Cadbury Brothers of Bournville near Birmingham. As our analysis has shown, Cadbury's cocoa is not manipulated with alkali or alkaline salts. It yields, in particular, an amount of mineral matter consistent with an absolutely pure cocoa deprived of the greater part of its fat.

Medical News.

ROYAL COLLEGES OF PHYSICIANS AND SURGEONS OF EDINBURGH AND FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At the July sittings of the Scottish Conjoint Medical Board in Glasgow the following candidates passed the respective examinations:—

First Examination (five years' course).—John Robert Dunn Holtby, Queen's College, Belfast (with distinction); John David Jones and Andrew Downie Macfie, St. Mungo's College, Glasgow; Matthew Hamilton Fleming, Anderson's College Medical School, Glasgow; and Charles Nyhan, Queen's College, Cork.

Second Examination (five years' course).—John M'Arthur, St. Mungo's College Medical School; Henry Ruddock Morehead, Queen's College, Cork; George Lees Baker, Owens College, Manchester; William Tregea, University of Birmingham; and Hugh Graham Anderson and James Beveridge M'Gregor, Anderson's College Medical School.

Second Examination (four years' course).—Robert Roberts, William Henry Williams, and Edward Wallen Strickland, Glasgow School; Alexander Jack, Queen's College, Belfast; and John Cretin, University College, Bristol.

Third Examination.—Eva Mary Handley and Anne F. Cleaver, London School of Medicine for Women; William Noble Walker, Anderson's College Medical School; David H. Vickery, Queen's College, Cork, and Trinity College, Dublin; Christopher Parker, Westminster Hospital School; George Henry Waugh, Owens College, Manchester; Joseph Owens, Edinburgh Medical School; John Priestley Newton, St. Mungo's College; and Robert Crothers, Edinburgh University and St. Mungo's College.

Final Examination and admitted Licentiates of the three Cooperating Authorities.—Alexander Allan, St. Mungo's College (with honours); Robert Calder Blyth, William Douglas Cockburn, Thomas M'Master Glen, Archibald Monteath Laurie, James Robert Robertson, John Walker, and Alexander Russell Young, St. Mungo's College; Robert Cumming, M.A., B.D., Glasgow University and Anderson's College; John Mulvihill Gerety, Ivan Arthur Jackson Russell, Gerald William Adams, and John Gilmour, Edinburgh Medical School; Anne Fenton Cleaver and Margaret Lucy Tyler, London School of Medicine for Women; David Hadden Vickery, Queen's College, Cork, and Trinity College, Dublin; Christopher Parker, Westminster Hospital; Thorvald Maurentuis Haugen, Royal Frederick University of Christiania; John Martin, Queen's Colleges, Galway and Belfast; and Charles E Hargitt, Queen's College, Birmingham, and Sheffield Medical School.

UNIVERSITY OF ABERDEEN.—The following degrees and diploma have been conferred on the undermentioned:—

Degree of Doctor of Science (D.Sc.).—Charles McLeod, M.A., Aberdeen; and John Rennie, B.Sc., Aberdeen.

Degree of Bachelor of Science (B.Sc.).—George Alex. Burnett, M.A., Eicht (with special distinction in Botany); William Dawson Henderson, M.A., Buckie (with special distinction in Zoology); and James Wood, M.A., Bucksburn.

Degree of Doctor of Medicine (M.D.).—Alex. Gregory Allan, M.A., M.B., C.M., London; James Snowie Cooper, M.B., C.M., New Machar; Wm. Cruickshank, M.B., C.M., Mozambique, East Africa; Archibald Dingwall, M.A., M.B., C.M., London; Simon John Coulter Fraser, M.B., C.M., London; George Geddes, M.B., C.M., Heywood, Lancs; George Alexander Gibb, M.B., C.M., Birmingham; Alex. Jamieson, M.B., C.M., London; †Charles Murray, M.A., M.B., Ch.B., Aberdeen (new regulations); †George Ford Petrie, M.B., Ch.B., Bistree, Herts (new regulations); *John Moir Petrie,* M.B., Ch.B., Thornton Heath, Surrey (new regulations); Alex. William Reid, M.B., C.M., Whitebridge, Inverness (new regulations); George Stephen, M.B., C.M., West Auckland, county Durham; *Frederick Mayfield Tindall, M.B., C.M., Bedlington, Northumberland; Robert Samuel Trotter, M.B., C.M., Bedlington, Northumberland; William Tuach, M.B., Ch.B., Dundee (new regulations); *Alex. Urquhart, M.A., M.B., Ch.B., Shepperton-on-Thames (new regulations); and *John Wishart, M.B., Ch.B., B.Sc., Bedlington, Northumberland (new regulations).

* Theses awarded commendation.

† Theses awarded highest honours.

Degrees of Bachelor of Medicine (M.B.) and Bachelor of Surgery (Ch.B.) (New Ordinances).—Benjamin James Alcock, M.A., Cruden; Richard Gavin Brown, Aberdeen; ‡§Alexander Callam, Glenbuchat, Aberdeenshire; §Margaret Duncan, Turriff; William Elwood, Grimsby; Isabella Gunn, Cullen; Matthew Hughs Harris, Newcastle, New South Wales, Australia; Maurice Buchan Johnson, Kew, Melbourne, Australia; Alexander Fraser MacBean, M.A., Peterhead; William Sim M'Gillivray, Macduff; Duncan James Macrae, Stornoway; James Webster Miller, Ardclach, Nairn; Frank Le Quesne Pelly, Londonderry, Ireland; Frank Gellie Tennant Petrkin, Aberdeen; George Baird Sleigh, M.A. Strichen, Aberdeenshire; Isabel Copland Smith, Aberdeen; ‡§Wm. Clarke Souter, Nigg, Aberdeen.

Degrees of Bachelor of Medicine (M.B.) and Master in Surgery (C.M.) (Old Ordinances).—George Charles M'Gregor, Keith, Banffshire; Allaster Lachlan Napier Maclean, Auckland New Zealand.

‡ With second class honours.

§ Passed Final examination with "distinction."

Diploma in Public Health.—Kenneth Fraser, M.B., Ch.B. Aberd., Inverness; John Halley, M.B., C.M. Aberd., Aberdeen; James Macfarlane, M.B., Ch.B. Aberd., Aberdeen; Arthur John Milne, M.B., Ch.B. Aberd., Aberdeen; John Stuart Rose, M.B., Ch.B. Aberd., Grantown-on-Spey; James Andrew Simpson, M.B., Ch.B. Aberd., Alford; Robert Alex. Slessor, M.A., M.B., Ch.B. Aberd., Aberdeen; William Edward Taylor, M.B., Ch.B. Aberd., Aberdeen; and George Clark Trotter, M.B., Ch.B. Edin., Edinburgh.

The John Murray medal and scholarship, awarded to the most distinguished graduate (M.B.) of 1903, was gained by Alexander Callam, Glenbuchat, and Hugh Maclean, Daviot, Inverness (equal); and the George Thompson fellowship was awarded to George Grant Macdonald, M.A., M.B., Ch.B., Cornhill, Banff.

The following candidates have been successful in the examinations indicated:—

First Portion of the First Professional Examination.—Ernest E. Alloway, John Anderson, Isabel M. Asher, James C. Bell, Alexander A. Bisset, John Brown, Robert W. Chalmers, James B. Cruickshank, James G. Danson, William J. Gerrard, Adam Gilchrist, Fiddes M. Greig, William B. Hargraves, Matthew Hay, Mabel Hector, Elizabeth J. Innes, Edward Johnson, James W. Littlejohn, William G. Macarthur, Margaret C. Macdonald, James D. Mackay, Agnes Mackinnon, Daniel J. M'Kinnon, William J. M'Intosh, Farquhar Macrae, Allan Massey, William Mearns, Arthur J. Milne, James A. Milne, Tom B. Nicholls, Ian Ogilvie, Secosseue Piarroux, Douglas Porter, John Rennie, Alexander Stewart, William L. Stewart, Robert Tindall, William G. Watt, and Douglas Wood.

First Professional Examination.—Williamson Abel, ‖William Anderson (Banff), John W. Archibald, James W. Barnett, Agnes V. Baxter, Thomas Clapperton, James A. M. Clark, James A. Davidson, ‖Walter J. Dilling, Robert L. P. Duncan, John Ferries, Williamina S. E. Fitzpatrick, Robert P. Garrow, Theodore G. Gray, James A. Hendry, ‖Alexander Horn, ¶David Horn, ‖John E. Kesson, Benjamin Knowles, James Leask, ‖George H. C. Lumsden, Robert W. Macpherson, Agnes Macrae, George Mitchell, James Mitchell, John P. Mitchell, Algernon E. C. Myers, ‖Andrew M'K. Niven, Alfred J. Pirie, James Robertson, Robert Ross, ¶Robert W. A. Salmond, Arthur Shepherd, Alexander H. Skinner, John P. Stuart, James E. G. Thomson, Ernest Walker, James J. P. Wilson, and John M'I. Wilson.

Second Professional Examination.—James Adams, Alexander Brown, Duncan Coutts, Richard Eager, Francis W. Falconer, William M. Ferguson, Alistair S. Garden, Charles B. Gerrard, James S. M'Connachie, James M. Macdonald, Joseph M. Macdonald, James M'Intosh, John A. Milne, Gavin E. A. Petrie, Alexander Robertson, Paul B. Roth, Robert F. Russell, John Sangster, James A. Scharenguivel, Donald G. Skeen, Charles M. Smith, and Robert N. Thomson.

Third Professional Examination.—George Adam, Walter A. Elwood, William G. Gordon, Henry W. Jeans, George E. Macallan, Helen M'Glashan, Roderick Mackay, ‖William M. M'Pherson, Alexander M'Robbie, Archibald D. Pringle, James Reid, ‖Charlotte A. F. Schultze, James H. Thomson, and Robert J. B. Wright.

‖ Passed with distinction. ¶ Passed with much distinction.

The following have been appointed additional examiners for four years:—Zoology: Philip J. White, M.D. Edin., professor of zoology in the University College of North Wales, Bangor. Physiology: Benjamin Moore, M.A., D.Sc. R.U.I., professor of bio-chemistry, University College, Liverpool. Medicine: Charles Oliver Hawthorne, M.D. Glasg., London. Midwifery: James Haig Ferguson, M.D. Edin., lecturer in midwifery, School of Medicine of the Royal Colleges, Edinburgh. D.P.H.: William Bruce, M.A., M.D., LL.D., Dingwall.

THE JENNER INSTITUTE OF PREVENTIVE MEDICINE.—An extraordinary general meeting of the members of the Jenner Institute of Preventive Medicine was held on July 22nd in the board-room of the institute, Chelsea-bridge-road, to consider a motion to alter the name of the institute to "The Lister Institute of Preventive Medicine." Sir Henry Roscoe occupied the chair and in moving the proposal said that out of motives of delicacy, which they all appreciated, Lord Lister, the chairman of the institute, had not attended the meeting. Sir Henry Roscoe read extracts from the memorandum which explained the reasons that had induced the governing body to propose the change of name, and said members would be glad to know that the name proposed had met with the full approval of Lord Iveagh who had been such a munificent donor to the institute. He was sure that all present would agree that they could not have a name which was more consonant with the feelings of those who were interested in the progress of preventive medicine than that of the Lister Institute. He thought it would be approved not only by the members present but by all the members and also by the medical profession generally and the public at large. Sir Joseph Fayrer, in seconding the motion, said he had never before seconded a motion with greater pleasure. He did not think it possible to have a more appropriate name than the one proposed. Dr. W. J. Simpson supported the motion which was unanimously adopted. A second meeting will be held on Friday, August 7th, when the resolution will be submitted for confirmation.

WESTMINSTER HOSPITAL MEDICAL SCHOOL.—On Saturday, July 18th, the annual distribution of prizes was held in the board room of the hospital, in the presence of a large gathering of the students and their friends, the members of the staff, and governors of the hospital. Mrs.

Allchin, Mrs. de Havilland Hall, Mrs. Spencer, Mrs. Gossage, Mrs. Hake, and other ladies were also present. In opening the proceedings the dean announced that he had just received a letter from Lord Strathcona, who had kindly consented to preside, deeply regretting his inability to attend, owing to an injury to his foot. In the unavoidable absence of Lord Strathcona the prizes were presented by Mr. G. V. Yool, the chairman of the school of medicine committee. While congratulating the prize-winners Mr. Yool wished the other competitors better luck next time and advised them to try again. The prize list was as follows:—J. A. B. Hicks, scholarship of 110 guineas; J. N. Beadles, scholarship of £60; G. G. James, scholarship of £60; A. W. Hayward, scholarship of £40; G. H. Curtis, scholarship of £40; W. C. Nimmo, Chadwick prize of 20 guineas for medicine and surgery; C. Parker, "Bird" medal and prize of the value of £14 for obstetric medicine; G. G. James, treasurer's prize of 10 guineas for anatomy, biology, and chemistry; J. J. W. Evans, prizes for practical chemistry and physics; H. Galloway, prize for biology; M. J. Cromie, prize for midwifery; C. Fletcher, prize for histology; W. France, prize for pharmacology and prize for medicine; W. Ball, prize for pathology; C. G. Browne, prize for anatomy; and R. Elworthy, prize for physiology. In moving a vote of thanks to the chairman Mr. W. G. Spencer expressed regret at the absence of Lord Strathcona, who had taken so deep an interest in the medical side of university education. He also alluded to the affiliation of the London medical schools to the University of London and hoped that the university would make some provision soon for relieving the medical schools from the teaching of elementary science.

Parliamentary Intelligence.

HOUSE OF COMMONS.

THURSDAY, JULY 23RD.

Vivisection.

Mr. PURKS asked the Secretary of State for the Home Department whether he was aware that during the year 1902 there were 12,000 experiments performed on living animals without anæsthetics and, if so, whether he would state if the feeding experiments forming part of the 12,000 included starving animals to death and also forced overfeeding; and whether these experiments were authorised by the Home Office.—Mr. AKERS-DOUGLAS replied: The return which has been laid before Parliament shows that, under licences and certificates duly authorised by the Secretary of State for the Home Department, over 12,000 experiments (being mostly inoculations and in no case involving any serious operation) were performed in 1902 without anæsthetics. Neither the starving of animals to death nor the forced overfeeding of animals is included among the experiments authorised or performed. In the case of one gentleman who was authorised to perform certain experiments, including four upon rats or rabbits kept without food for certain periods at the end of which they were to be killed, the return shows one experiment.

Civil Surgeons and the Army.

Mr. SOAMES asked the Secretary of State for War whether in terminating the engagements of civil surgeons attached to the Royal Army Medical Corps, inasmuch as by the conditions of their appointment such surgeons were required to devote their whole time to army duties, the services of those who held civil appointments in addition would be dispensed with before those of gentlemen holding no such appointments.—Mr. BRODRICK replied: The engagements of the civil surgeons who are devoting their whole time to military duty, and which are liable to termination on the services of an army medical officer becoming available, are quite distinct from those of civil surgeons who do not devote their whole time to military duty and which are liable to termination at any time, such appointments being made locally. The latter are available always to meet local difficulties and are paid considerably less than the former. The proposal of the honourable Member would therefore throw additional expenditure on the State without any corresponding advantages.

FRIDAY, JULY 24TH.

Plague in India.

Sir CHARLES CAYZER asked the Secretary of State for India whether he had received the report of the Commission appointed by the Government of India to inquire into the cause of the Molkowal disaster, in the Punjab, where 19 people died from tetanus after plague inoculation; and, if so, whether he would state what action he intended to take on the recommendation of the Commission with a view to re-establishing confidence in anti-plague inoculation; and whether he would lay the papers before the House?—Lord GEORGE HAMILTON replied: The report has reached me and is under consideration. It is confined to ascertaining the circumstances which led to the issue of impure plague prophylactic from the Bombay laboratory in the autumn of 1902 and the persons responsible for the same. The question of the process to be used in future for the preparation of the fluid, or of the organisation of the laboratory, was not referred to the Commission and is not dealt with in its report. Measures had previously been taken by the Government to re-establish confidence by reverting to the former method of preparing the prophylactic and by strengthening the staff of the laboratory. At the present stage I am unable to state what orders will be issued upon the report or whether the papers can be laid before the House.

MONDAY, JULY 27TH.

Humanised Lymph.

Mr. WEIR asked the Lord Advocate whether, seeing that the use of humanised lymph is prohibited in England and most other European countries, he would consider the expediency of taking such steps as may be necessary to prevent parochial vaccinators in Scotland from adopting a system of arm-to-arm vaccination which has been condemned by a Royal Commission and also by leading medical authorities in Europe.—The LORD ADVOCATE: The hon. Member is misinformed in stating that humanised lymph is prohibited in England. It is not at present in contemplation to take the steps suggested in the question.

Glanders among Men and Horses.

Mr. KEARLEY asked the President of the Board of Agriculture whether he was aware that glanders among horses and men had been more than usually prevalent during the past year; and, if so, could he say whether the returns showed a considerable increase generally over those of 20 years ago and whether the department intended in the circumstances to carry out the recommendations made four years since by a departmental committee.—Mr. FELLOWS, who replied, said: There has recently been some increase in the number of cases of glanders reported, 795 outbreaks having occurred in the first 29 weeks of the present year, as compared with 641 in the corresponding period of 1902. The disease is one, however, which has always been subject to considerable fluctuations, and it was not more prevalent last year than it had been on several occasions since it was first scheduled in 1877. The number of deaths from glanders amongst men have varied from six in 1899 and 1897 to one in 1896. The inquiry to which the hon. Member refers was necessarily followed by further scientific investigations as to the communicability of the disease and the effect of the application of mallein. The report of those investigations has been received and we are now in communication with the local authorities principally concerned with a view to ascertain to what extent it may be practicable to give effect to the recommendations of the department al committee.

TUESDAY, JULY 28TH.

An Irish Medical Question.

Mr. DELANY asked the Chief Secretary to the Lord Lieutenant of Ireland whether his attention had been drawn to a resolution passed at a special meeting of the Irish Medical Association held at Tullamore on July 8th protesting against the action of Dr. M'Carthy in accepting the position of medical officer of the Killoughy Dispensary District, King's County, in defiance of the expressed and conveyed opinion of the members of the Irish Medical Association, and requiring him to reconsider his position; and whether, seeing that in consequence of this resolution Dr. M'Carthy had tendered his resignation, although his appointment had been sanctioned by the Local Government Board, he would state what steps he proposed taking in the matter.—Mr. WYNDHAM: The resolution has been received. The Local Government Board has suggested to the guardians the propriety of calling upon Dr. M'Carthy to take up at once his duties as medical officer. In the event of his failing to do so the Board will hold a sworn inquiry into the circumstances of the case.

Medical Examination of Army Candidates.

Mr. MACNEILL asked the Secretary of State for War whether, having regard to the fact that at present the successful candidates for admission to both Woolwich and Sandhurst are required to present themselves in London for medical examination as to their physical fitness, with the view to the lessening of the expenses of successful candidates resident in Ireland and Scotland, arrangements could be made for allowing them to present themselves for the medical examination in Dublin or Edinburgh.—Mr. BRODRICK: It is considered to be in the best interests of the candidates that they should be examined by the same medical board rather than by two or three boards, especially in view of the fact that in cases of appeal the board can only be held in London.

WEDNESDAY, JULY 29TH.

The Proposed Hospital at East Cowes.

Major SEELY asked the Civil Lord of the Admiralty whether it had been decided not to convert the barracks at East Cowes into an infectious hospital in connexion with the Royal Naval College at Osborne.—Mr. PRETYMAN: It has been decided owing to the continued insanitary state of the foreshore at East Cowes not to carry out the proposed conversion of the barracks at the present time, but to erect a small infectious hospital on another site.

Vaccination Exemptions.

Mr. LEVY asked the Secretary of State for the Home Department whether he could state the number of times application has been made for exemption from vaccination at the Brentford police-court during the last two years and the number of times such application has been refused.—Mr. AKERS DOUGLAS: I am informed by the magistrates' clerk that no record is kept of the number of applications or refusals, but that eight exemption certificates have been granted in the last two years at the Brentford court.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information available for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

ALLISON, T. M., M.D., B.S. Durh., has been appointed Honorary Physician to the Hospital for Diseases of Women, Newcastle-on-Tyne.

BRASH, E. A., M.R.C.S., has been appointed Medical Officer of Health, *pro tem.*, of Exeter.

CHESSON, HERBERT, M.R.C.S., L.R.C.P. Lond., has been appointed Public Vaccinator of the District of Rakaia, New Zealand.

CORNER, EDRED M., B.Sc. Lond., M.A., M.B., B.C. Cantab., F.R.C.S. Eng., has been appointed Assistant Surgeon to the Hospital for Sick Children, Great Ormond-street.

FOX, HUGH CLAYTON, F.R.C.S. Irel., has been appointed Assistant Surgeon to the Metropolitan Ear, Nose, and Throat Hospital, Grafton-street, W.

FRASER, J. H. P., M.R.C.S., L.R.C.P. Lond., has been appointed a Medical Referee under the Workmen's Compensation Acts, 1897–1900, for Southampton, Winchester, and Romsey in County Court Circuit No. 51.

HUDSON, JAMES, M.R.C.S., has been appointed a Port Health Officer under the Public Health Act, 1900, of the Port of Nelson, New Zealand.

MATTHEWS, JOHN MORTON, M.B., B.S. Univ. N.Z., has been appointed Public Vaccinator of the District of Gore, New Zealand.

TODD, WILLIAM, M.D. (South California), has been appointed Public Vaccinator of the District of Dipton, New Zealand.

TURNER, G. A., M.B., C.M., D.P.H., has been appointed Medical Officer of Health to the Table Bay Harbour Board, Cape Town.

WORRALL, E. S., M.R.C.S. Eng., L.R.C.P. Lond., has been appointed Medical Officer in Charge of the Radiographic Department, Victoria Hospital for Children, Tite-street, Chelsea.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BIRKENHEAD BOROUGH HOSPITAL.—Junior Male House Surgeon. Salary £80 per annum, with board and washing.

BIRMINGHAM WORKHOUSE INFIRMARY.—Assistant Resident Medical Officer. Salary £100 per annum, with apartments, rations, &c.

CARDIFF, UNIVERSITY COLLEGE OF SOUTH WALES AND MONMOUTHSHIRE.—Professor of Anatomy. Salary £350 per annum.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—Second House Physician for six months. Salary at rate of £30 per annum, with board, washing, and residence.

CLAYTON HOSPITAL AND WAKEFIELD GENERAL DISPENSARY.—Junior House Surgeon, unmarried. Salary £80 per annum, with board, lodgings, and washing.

DEVONPORT, ROYAL ALBERT HOSPITAL.—Assistant House Surgeon for six months. Salary at rate of £50 per annum, with board, lodging, and washing.

DUMFRIES AND GALLOWAY ROYAL INFIRMARY.—House Surgeon. Salary £50 per annum, with board and washing.

LANCASHIRE COUNTY ASYLUM, Winwick, Warrington.—Assistant Medical Officer, unmarried. Salary £150 per annum, with prospect of increase to £350, with apartments, board, attendance, and washing.

LIVERPOOL, SAMARITAN HOSPITAL FOR WOMEN.—Honorary Surgeon.

LIVERPOOL STANLEY HOSPITAL.—Second House Surgeon. Salary £80 per annum, with board, residence, and washing.

NORTH STAFFORDSHIRE INFIRMARY AND EYE HOSPITAL, Hartshill, Stoke-upon-Trent.—Assistant House Surgeon. Board, apartments, and washing, and at least £25 as honorarium for six months.

QUEEN'S HOSPITAL, Birmingham.—Two House Surgeons. Salary at rate of £50 per annum, with board, lodging, and washing.

RAMSGATE GENERAL HOSPITAL AND SEAMAN'S INFIRMARY AND THE RAMSGATE AND ST. LAWRENCE DISPENSARY.—Resident Medical Officer, unmarried. Salary £100 per annum, with furnished apartments, board, and attendance.

READING, ROYAL BERKSHIRE HOSPITAL.—House Physician, also House Surgeon, both for six months. Salary £80 per annum in each case, with board, lodging, and washing.

ROYAL LANCASTER INFIRMARY.—House Surgeon, unmarried. Salary £100 per annum, with residence, board, attendance, and washing.

SALFORD UNION INFIRMARY, Hope, near Eccles.—Male Assistant Resident Medical Officer. Salary £130 per annum, with apartments and attendance.

SHREWSBURY, SALOP INFIRMARY.—House Surgeon. Salary £100 per annum, with board, washing, and residence.

SOUTHWARK UNION INFIRMARY, East Dulwich-grove, S.E.—Assistant Medical Superintendent. Salary £130 per annum, with furnished apartments, board, and washing. Emoluments are valued at £80 per annum.

STOCKPORT INFIRMARY.—Assistant House and Visiting Surgeon. Salary £80 per annum, with board, washing, and residence. Also Junior Assistant House Surgeon for six months. Salary at rate of £40 per annum, with board, washing, and residence.

SUSSEX COUNTY HOSPITAL.—Second House Surgeon and Anæsthetist, unmarried. Salary £70 per annum, with board, washing, and residence.

Births, Marriages, and Deaths.

BIRTHS.

GRIFFITHS.—On July 21st, at 6, Windsor-place, Cardiff, the wife of Cornelius A. Griffiths, F.R.C.S., of a son.

LOW.—On July 21st, at 27, Queen Anne-street, Cavendish-square, the wife of V. Warren Low, M.D., B.S., F.R.C.S., of a son.

MARRIAGES.

BEVAN—BARNARDO.—On July 22nd, at Christ Church, Lancaster-gate, by the Rev. Prebendary Ridgeway, Arthur Bevan, M.D., of 17, Kensington Garden-terrace, Lancaster-gate, youngest son of the late W. J. B. Bevan and of Mrs. Bevan, of 50, Elm Park-gardens, Chelsea, to Amy Cecilia, only daughter of George C. F. Barnardo, M.C.E., of Glendhoon, Surrey-road, Bournemouth.

TAYLOR—HISSEY.—On July 25th, at St. Lawrence Church, Hungerford, by the Rev. Hew F. Severn, of Weston-superr-Mare, assisted by the Rev. Wardley King, curate of St. Lawrence, Wallace G. Taylor, L.D.S. Eng., of Standen House, Weston-super-Mare, fifth son of Frederic Taylor, of Oare, Newbury, to Nancie, second daughter of Alfred Hissey, of North Standen, Hungerford, Berks.

Notes, Short Comments, and Answers to Correspondents.

DECIDUOUS TEETH REPLACED AFTER EXTRACTION BY AN ACCIDENT.

IN the July number of *Pædiatrics* an unusual accident is described by Dr. Samuel E. Earp of Indianapolis, U.S.A. The patient was a girl, aged 16 months, and the accident occurred on May 6th, 1902, while she was seated in a rocker which had the representation of a horse on either side; between the heads there was a round bar and below it there was a wooden tray which moved on an axis. During a period of violent rocking when the head was inclined farther forward than usual the four lower incisors caught between the edge of the tray and the cross-rod; during the consequent backward movement the teeth were forced from the alveoli and the labial surface of the teeth were in contact with the lower lip. The gum tissue on either side was lacerated to the alveolar margin of the maxillary bone. There was a slight attachment of tissue on the anterior surface which in this position would in reality be the under surface, so that it comprised a plate with the apices of the roots completely detached and extending over the inner margin. An elevation on each side of the wound indicated that the canines were upon the verge of eruption. There were no teeth to which a mechanical appliance could be attached. The hæmorrhage was no more than would result from the extraction of several teeth. The injured parts and the mouth were treated with an antiseptic solution consisting mainly of boric acid, the teeth were replaced, and after firm pressure for five minutes were kept in place by a pledget of cotton wool saturated with the same solution, but the customary head bandage was ineffectual. A combination of bromide of sodium and hydrate of chloral was given to produce quietude. The diet was liquid. Two days later the child fell and once more produced the same condition of affairs as above described. Dr. Earp had now less hope of success than ever. He, however, proceeded as before in dressing the injury and after a few weeks the teeth were firm and at the date of his paper in *Pædiatrics* all were uniform and in a healthy condition. The preservation of the teeth in this instance prevented depression which during the succeeding four or six years would have changed the expression of the features. The successful readjustment also probably prevented destruction of the rudiments of the permanent teeth.

THE PRESCRIBING "CHEMIST."

To the Editors of THE LANCET.

SIRS,—I was recently called to see an old lady who had for some time been under the "professional" care of a local chemist who does a considerable practice in unqualified prescribing. He apparently possesses all the assurance begotten of ignorance, but added thereto is impertinence. Upon his label is the following announcement:—

—— ——, A.P.S.,

(Late Assistant to Dr. ——, London).

This is evidently intended to make the public believe that he is qualified to prescribe. It would be interesting to know in what capacity he acted as assistant and whether he has the permission to make use of Dr. ——'s name in this manner. I feel assured that he possesses no such authority and that Dr. —— if still in practice is quite ignorant of the manner in which his name is being made use of for trade purposes and as a means of deceiving the public. Should I require the services of a qualified dispenser I should insist that no such use shall be made of my name when he leaves my employment. Such a case as this should make medical men hesitate before associating themselves with chemists in any sense which will allow them to deceive the credulous as to their true vocation and professional status.

I am, Sirs, yours faithfully,

July 23rd, 1903. MEDICUS.

THE LANCET AND THE TURF.

A CORRESPONDENT points out that Mr. Leopold de Rothschild is the owner of a two-year-old racehorse named "Lancet," which was entered for the Hurstbourne Stakes at the Bibury Club meeting on July 8th. We trust we shall not be considered to possess too intimate an acquaintance with affairs of the turf if we remind our correspondent that not many years ago there was a comparatively well-known steeplechaser or hurdle-racer (we forget which) which also bore the name of "Lancet." In both instances doubtless the name was taken from the surgical instrument from which this journal also derived its title. Certainly we cannot flatter ourselves that Mr. Leopold de Rothschild is a reader of our columns. Perhaps the only connexion between THE LANCET and horse-racing is that we may have indirectly induced one or two generous magnates of the turf to contribute munificently to medical charities.

DETERIORATION OF MICROSCOPE LENSES AND INDIA-RUBBER GOODS IN HOT CLIMATES.

THE following is from a paper on the Preservation of Instruments in Bengal, read by Mr. Paul Bruhl before the Calcutta section of the Institution of Electrical Engineers on March 27th and printed in the London *Engineer* of July 24th.

> One of the most powerful corroding agents employed by nature is carbonic acid. We are accustomed to look at carbonic acid as a weak acid ..... but when the acid is more concentrated under the action of high pressures the action is markedly different. Now capillary action has a similar effect on concentration as a large increase of superincumbent pressure; and the carbonic acid present in the film of moisture which covers all articles during the rainy season, or in the film separating two surfaces in apparent contact, is in a much more concentrated state than corresponds to the atmospheric pressure. Such carbonic acid is capable of displacing the silicic acid of natural and artificial silicates. ..... Microscopists know how difficult it is to keep a stock of blank glass slides. If you keep your glass slides in contact with each other they are sure to grow dim ..... sometimes even if placed in alcohol. An absolutely safe plan is to tie two threads round each separate slide near its two ends, form a number of slides into bundles and keep them in alcohol or formalene. ..... The worst place to keep microscope objectives in during the rainy season is the cylindrical brass case provided for them by the makers. Microscope lenses, in fact lenses and glass parts in general, do not stand close confinement for any length of time. Constant use is the best preservative. In any case place the lenses in a capacious box and air them frequently. ..... Some of the modern kinds of glass have to be tended very carefully ..... otherwise they will soon become dim evenly all over their surface. ..... The best way of keeping rubber stoppers is to put them into a wide stoppered glass jar, at the bottom of which is placed an inverted perforated dish to serve as a support for the stoppers after pouring some oil of turpentine on the bottom of the jar. Stoppers which have acquired a hard cracked surface can be softened by proceeding similarly, only using chloroform instead of turpentine. A good way of preserving rubber tubing is to give it a coating of glycerine.

ORGANO-THERAPY.

DR. MARPMANN of the Hygienic Laboratory in Leipsic has sent us an account of some unexpected results which have been obtained in that institution with the root of an Indian plant. When various extracts and other preparations of this root, the name of which he has written very indistinctly, were administered to the human subject, even in very small doses, they produced a transient sedative effect, followed by pain in the stomach and violent headache. Rabbits, weighing three or four pounds, were killed in four hours by the subcutaneous injection of 0·1 milligramme of the ethereal extract of the root. When, however, injections of 0·01 milligramme were given and continued in increasing doses for ten days such toleration was established that the rabbit was unaffected by injections of one milligramme and upwards, quantities which, if given at first, would certainly have been fatal. From these rabbits thus "immunised" it was found that a substance could be prepared which was useful in the treatment of neurasthenia while possessing the toxic qualities of the root in only a slight degree and none of its disagreeable after-effects. An addendum to Dr. Marpmann's communication states that it has been found possible by passing arsenical compounds through the bodies of animals to produce "organo-preparations" in which, although they contain arsenic, the ordinary physiological effect of that element is materially modified.

THE ADMINISTRATION OF CALCIUM CHLORIDE.

To the Editors of THE LANCET.

SIRS,—Your correspondent "Z" will find that the liquid extract of liquorice root or peppermint water and simple syrup most effectually disguise the taste of calcium chloride. One hour after a meal is the best time for administration, or the drug may be given by means of enemata as used by Gross in quantities of 200 cubic centimetres (six and two-third fluid ounces) of an aqueous 5 per cent. solution. Mr. A. W. Mayo Robson, in THE LANCET of April 12th, 1902, p. 1024, mentions that he gives as much as 60 grains three times a day by the rectum.

I am, Sirs, yours faithfully,

July 28th, 1903. W.

KEYMER BRICK AND TILE COMPANY, LIMITED: A DISCLAIMER.

To the Editors of THE LANCET.

SIRS,—I notice in THE LANCET of July 25th, p. 257, you publish a judgment by Mr. Justice Joyce granting an injunction against the above company for creating a public nuisance. As several medical men and friends have read this notice as referring to my estate, Coombe Hill, Sussex, I should be much obliged if you would be kind enough to publish this disclaimer, as otherwise it is calculated to do my property and myself serious injury.

I am, Sirs, yours faithfully,

Coombe Hill, Sussex, July 28th, 1903. W. B. KEYMER.

THE RAINFALL OF JUNE, 1903.

THE remarkable rainfall of last June, which caused much inconvenience and damage by flooding in the Thames Valley, is the subject of a detailed analysis in the July number of *Symons's Meteorological Magazine* (published by Edward Stanford, Long-acre, London, W.C.). During that month the rainfall was very unequally distributed over the British Isles, the wettest part having been the south of England and the driest part the north of Ireland. A broad, dry belt in which the fall scarcely anywhere reached two inches (and nowhere reached the average for the month) stretched from North Wales and the Mersey to the Humber and the Wash, separating a slightly higher rainfall on the north from an excessively high rainfall on the south. The wet zone stretched from west to east across the country. Along the axis of it from Swindon to Southend, for a distance of 110 miles, the rainfall exceeded six inches, being more than three times the average amount. This extremely heavy fall prevailed over the greater part of the valley of the Thames and the Lee; in the south, especially in the neighbourhood of Croydon, it exceeded seven inches and at Carshalton it reached the unprecedented figure of 8·91 inches. It is estimated that in the ten days between June 8th and 19th, during which all the rain fell, the amount of water deposited on the drainage area of the two rivers, the Thames and the Lee, was 1,494,000,000 tons, or 334,560,000,000 gallons. One inch of rain over one square mile of area is equal to about 64,860 tons of water, or 14,483,000 gallons. Observations made at Camden-square in London showed that rain to the depth of 6·43 inches (which was the whole of the month's rain) fell in those ten days, and on the assumption that this rate held good for the whole metropolitan county the amount of water deposited in London during the period when it was falling averaged 433,000 tons, or 97,000,000 gallons, per hour. This total of 6·43 inches for the month of June has only been exceeded in June, 1878—with 6·71 inches, and only on one other occasion in any month—namely, in August, 1878, with 6·72 inches.

ASTROLOGY.

To the Editors of THE LANCET.

SIRS,—Your readers may be interested to learn that belief in astrology is not yet extinct in Norfolk. A little time ago I was called in to see a patient who was suffering from an advanced cancer of the parotid gland, from which he has recently died. This patient before seeing me had consulted a quack at North Elmham because he "cured diseases by the stars." After taking his money this "cunning man" told him the tumour could be cured, but that in order to cure it he should need to know "what star the patient was born under." The poor old man went away sorrowful as he could not supply the necessary information and he died under the impression that the disease was curable if only the demands of the quack could have been met.

I am, Sirs, yours truly,

Fakenham, July 28th, 1903. F. L. POCHIN, M.B., C.M. Edin.

PROTRUSION OF THE NAVEL.

To the Editors of THE LANCET.

SIRS,—I should be obliged for any hints in regard to the treatment of an abnormally protruding navel in a boy, aged three months. I have tried simple pressure without success.

I am, Sirs, yours faithfully,

July 28th, 1903. RAMUS.

S.W.—We are sorry to be unable to refer our correspondent to any book or journal which describes the operation in question. There is no doubt that the skin does absorb oils and fats if applied by rubbing, and the most obvious proof of this is the old-fashioned method of giving mercury by inunction. The absorption of the mercury was soon apparent and as the drug was intimately mixed with the fat the presumption is that the fat was absorbed also. There are various preparations of iodine dissolved in fatty substances which if rubbed on the skin rapidly disappear, when iodine can be detected in the urine and the taste of the drug can be perceived in the mouth.

Ethical.—The paragraph is an unfortunate one, but there is no reason to suppose that the medical man in question is in any way responsible for its insertion.

L.R.C.P. & S.—We think if our correspondent wrote to the secretary of the Jenner Institute of Preventive Medicine that he would obtain the information which he requires.

M.R.C.S.—The preparation in question is, we believe, an organic compound of bromin.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

During the week marked copies of the following newspapers have been received: *Yorkshire Post, Yorkshire Daily Observer, Staffordshire Sentinel, Times of India, Aberdeen Free Press, Pioneer Mail (India), Dublin Evening Telegraph, Echo, Bradford Observer, Daily Express, Globe, Medical Brief (St. Louis, U.S.A.), Knowledge, Westminster Gazette, Windsor and Eton Express, Derbyshire Courier, Derbyshire Times, Reading Mercury, Herts Advertiser, Daily Telegraph, Manchester Weekly Chronicle, &c.*

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, July 30th, 1903.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radia in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks at 8.30 A.M.
July 24	29·76	S.W.	1·39	120	75	56	56	58	Raining
,, 25	29·99	S.W.	...	126	72	55	57	62	Fine
,, 26	29·72	S.	1·00	111	67	58	60	62	Cloudy
,, 27	29·58	S.W.	0·52	107	65	55	57	62	Cloudy
,, 28	29·69	W.	0·12	94	65	57	57	62	Cloudy
,, 29	29·60	W.	0·42	114	67	58	57	61	Cloudy
,, 30	29·63	N.W.	0·44	103	66	54	56	61	Cloudy

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (3rd).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Royal Orthopædic (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.).

TUESDAY (4th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Royal Ear (3 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat Golden-square (9.30 A.M.), Soho-square (2 P.M.).

WEDNESDAY (5th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.) Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M).

THURSDAY (6th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat, (9.30 A.M.), St. Mark's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

FRIDAY (7th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.).

SATURDAY (8th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index to Vol. I. of 1903, which was completed with the issue of June 27th, and the Title-page to the Volume, were given in THE LANCET of July 4th.

VOLUMES AND CASES.

VOLUMES for the first half of the year 1903 are now ready. Bound in cloth, gilt lettered, price 18*s.*, carriage extra.

Cases for binding the half-year's numbers are now ready. Cloth, gilt lettered, price 2*s.*, by post 2*s.* 3*d.*

To be obtained on application to the Manager, accompanied by remittance.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

The rates of subscriptions, post free, either from THE LANCET Offices or from Agents, are:—

FOR THE UNITED KINGDOM.		TO THE COLONIES AND ABROAD.	
One Year	£1 12 6	One Year	£1 14 8
Six Months	0 16 3	Six Months	0 17 4
Three Months	0 8 2	Three Months	0 8 8

Subscriptions (which may commence at any time) are payable in advance. Cheques and Post Office Orders (crossed "London and Westminster Bank, Westminster Branch") should be made payable to the Manager, MR. CHARLES GOOD, THE LANCET Offices, 423, Strand, London, W.C.

SUBSCRIBERS ABROAD ARE PARTICULARLY REQUESTED TO NOTE THE RATES OF SUBSCRIPTIONS GIVEN ABOVE. It has come to the knowledge of the Manager that in some cases higher rates are being charged, on the plea that the heavy weight of THE LANCET necessitates additional postage above the ordinary rate allowed for in the terms of subscriptions. Any demand for increased rates, on this or on any other ground, should be resisted. The Proprietors of THE LANCET have for many years paid, and continue to pay, the whole of the heavy cost of postage on overweight foreign issues; and Agents are authorised to collect, and do so collect, from the Proprietors the cost of such extra postage.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied. Address—THE MANAGER, THE LANCET OFFICES, 423, STRAND, LONDON, ENGLAND.

Communications, Letters, &c., have been received from—

A.—Messrs. Allen and Hanburys, Lond.; Arabella, Ltd., Lond.; Mr. J. E. Abbott, Cardiff; Miss C. E. Adams, Lond.; Dr. J. Adam, West Malling; Mr. F. Algar, Lond.; A. R. H.; A. G.

B.—Mr. J. W. Benson, Lond.; Mr. J. W. Bashford, Lond.; Mr. E. M. W. Blogg, Baltimore; Dr. W. Bruce, Dingwall; Messrs. Robert Boyle and Son, Lond.; Mr. T. W. S. Browne, Chatham; Mr. C. S. Bremner, Lond; Dr. F. Burthe, Paris; Dr. F. Bushnell, Plymouth; Dr. D. Bower, Bedford; Mr. C. Birchall, Liverpool; Mr. T. Bradley, Lond.; Messrs. Burroughs, Wellcome and Co., Lond.

C.—Mr. F. Powell Connor, Lond.; Messrs. J. and A. Churchill, Lond.; City of London Medical Officer of Health of; C. L. B.; Mr. J. B. Cameron, Lond.; Central Midwives Board, Secretary of; Mr. R. A. Caldwell, Bournemouth; Clayton Hospital, Wakefield, Secretary of.

D.—Messrs. G. W. and C. H. Dancocks, Lond.; Ven. Archdeacon Danks, Bishop Monkton; Mr. S. Davidson, Manchester; Denver Chemical Manufacturing Co., Lond.; Dundee Royal Infirmary; Mr. H. G. De Styrap, Shrewsbury; Dr. G. Dean, Bistree; Messrs. S. Deacon and Co., Lond.; Messrs. H. Dawson and Co., Lond.

E.—Messrs. Evans, Sons, Lescher, and Webb, Lond.; Mr. A. Eberlin, Nottingham; Ethical.

F.—Dr. Victor G. L. Fielden, Belfast; Dr. A. Forsyth, Lond.; Messrs. Farebrother, Ellis and Co., Lond.

G.—Messrs. C. T. Getting and Sons, Lond.; Messrs. Giles, Schacht and Co., Clifton; Great Eastern Railway Company, Continental Manager of, Lond.; Galen Manufacturing Co., Lond.

H.—Hotel and General Advertising Co., Ltd., Lond., Secretary of; Dr. Stenson Hooker, Lond.; Home Office; Hampstead, Medical Officer of Health of; Mr. O. L. Holst, Eastbourne; Messrs. R. S. Hansen and Co., Winnipeg, Canada; Dr. D. Hooper, Lond.; Hanley, Stoke and Fenton Joint Hospital Board, Secretary of; H. W. V.; Mr. P. Howard, Lond.

I.—Institut de Bibliographie, Paris; Irish Medical Association, Dublin, Secretary of; Mr. T. H. W. Idris, Lond.

J.—Dr. R. Jones, Claybury.

K.—Dr. B. Kelly, Lond.; Messrs. R. A. Knight and Co., Lond.

L.—Legation de Suisse à Londres; Liverpool Stanley Hospital, Secretary of; Mr. H. Lamond, Glasgow; Mr. H. K. Lewis, Lond.; Lancs County Asylum, Winwick, Secretary of.

M.—Dr. E. F. Maynard, Hove; Mr. Daniel Magnus, Lond.; Mr. B. G. A. Moynihan, Leeds; Mr. W. R. Miller, Dumfries; Mr. M. P. Main, Paris; Meticus; Mr. J. Gawler Murray, Lond.; Messrs. Z. P. Maruya and Co., Yokohama; *Medical Review*, Lond., Manager of; Motor Mart, Ltd., Lond.; Dr. B. Moore, Liverpool; Mr. J. S. Mackintosh, Lond.; Dr. Rodolfo Marotta, Naples; Mr. J. McCulloch, Stranraer.

N.—North Staffordshire Infirmary, Hartshill, Secretary of; National Orthopædic Hospital, Secretary of, Lond.; Nomina sunt odiosa; Mr. H. Needes, Lond.; Mr. J. C. Needes, Lond.

P.—Mr. Y. J. Pentland Edinburgh; Dr. F. W. Pavy, Lond.; Miss Pate, Cambridge; Messrs. T. Peatling and Sons, Wisbech; Messrs. Peacock and Hadley, Lond.; Dr. E. J. Pritchard, Bournemouth; Dr. E. L. Phillips, Ystrad.

Q.—Queen's Hospital, Birmingham, Secretary of.

R.—Messrs. Robertson and Scott, Edinburgh; Royal Institute of Public Health Congress, Liverpool, Hon. Secretary of; R. F. S.; Ramsgate General Hospital, Secretary of; Royal College of Physicians of Edinburgh, Secretary of; Dr. Walter Reeve, Lond.

S.—Surgeon T. B. Shaw, R.N., Devonport; Mr. H. R. Salmon, Lond.; Dr. Louis E. Stevenson, Temple Sowerby; Mr. B. C. Stevens, Swinton; Mr. M. A. Sagoon, Bombay; St. Bartholomew's Hospital Enquiry Committee, Secretary of; S. W.; Mr. J. H. Spreat, Bath; Messrs. Spiers and Pond, Lond.; Messrs. W. H. Smith and Son, Birmingham; Mr. W. Greenwood Sutcliffe, Margate; Dr. C. Butler Savory, Leeds; Dr. Thomas Sansome, West Bromwich; Mr. H. Strode Smith, Axbridge; Messrs. G. Street and Co., Lond.; Scholastic, Clerical, and Medical Association, Lond.

T.—Messrs. Taylor and Sons, Portsmouth; Dr. L. Thorne Thorne, Lond.

V.—Visanus Co., Glasgow, Secretary of.

W.—Dr. Arthur C. Wilson, Sissinghurst; Dr. R. T. Williamson, Manchester; Mr. C. Whitman, Paris; Miss E. Wright, Lond.; Dr. J. Wishart, Bedlington; Mr. J. F. Woodyatt, Halifax; W. H. W.; Mr. T. J. Wright, Paris; Messrs. Thomas Williams, Sons, and Behenna, Swansea; Mr. J. H. White, Workington; Dr. J. T. Wilson, Hamilton, N.B.

Letters, each with enclosure, are also acknowledged from—

A.—Mr. R. H. Aloffit, Aberaman; Apollinaris Co., Lond.; A. L.

B.—Mr. J. M. Beecher, La Cananea, Mexico; Mr. C. H. P. Betenson, Lond.; Messrs. J. and H. Bell, Nottingham; Messrs. Benson and Co., Lond.; *Birmingham Daily Post*, Manager of; Mr. T. Bell, Lancaster; Mrs. Bennett, Lond.; Messrs. Bedford and Co., Lond.; B. G. W.; B. G. M.

C.—Miss S. Cotterell, Leicester; Chelsea Guardians, Clerk of; C. N. T.; Mr. W. Corken, Bbbw Vale; Dr. J. J. Crowley, Cork; Dr. S. G. Champion, Compton Martin; College of Preceptors, Lond., Secretary of; Messrs. Carnrick and Co., Lond.; Messrs. E. Cook and Co., Lond.; C. M.; Mr. J. H. Caird, Papa Westray; C. E. A.; C. B. M.; C. P.

D.—Mr. R. Davis, Lond.; Mr. D. O. Dykes, Edinburgh; Dr. W. C. Daniel, Epsom; Mr. J. A. Drake, Clifton; Dover Hospital, Hon. Secretary of; Mr. C. Dixon, Lond.; Messrs. Duncan, Flockhart and Co., Edinburgh.

E.—Mr. T. F. Elmes, Sunday's Well; Messrs. Elliott and Co., Edinburgh; Ennore, Bournemouth; Mr. E. A. Edington, Godstone; E. R. H.; E. E. S.

F.—Mr. W. A. F. Fairbank, Lond.; Dr. J. K. Fowler, Lond.; Messrs. Foster, McClellan and Co., Lond.; F. G.; Messrs. Fletcher, Fletcher and Co., Lond.; Mrs. Ferguson, Barnet; F. A. H.

G.—Mr. E. Gooch, Lond.; Mr. W. Grisewood, Liverpool; Mr. J. C. Gordon, Partick; Miss Gunner, Grimsby; Messrs. Gale and Co., Lond.; Mr. W. Greene, Monkstown; Mr. W. Griffiths, Blaenavon; Mr. J. H. Goring, Lond.; Messrs. Guyot, Guenin and Co., Lond.; Dr. C. G. Gibson, Launceston; Mr. J. Greenway, Southport.

H.—Messrs. Hastings Bros., Lond.; Messrs. J. Haddon and Co., Lond.; Captain L. W. Harrison, R.A.M.C., Sialkot, India; Mr. T. Holland, Lond.; Mr. J. J. Hanly, Guernsey; Messrs. Hirschfeld Bros., Lond.; Dr. V. Harley, Lond.

J.—J. M. F.; J. W. R.; J. T. C. C.; J. C. T.; J. E.

K.—Mr. W. Kirwan, Oranmore; Messrs. Kilner Bros., Lond.; Dr. W. R. Kingdon, Lond.

L.—Messrs. Lee and Martin, Birmingham; Miss F. Leech, Lond.; Liverpool Royal Infirmary, Secretary of; Mr. V. Warren Low, Lond.

M.—Mr. Wm. Mackudy, Stilton; Dr. H. Munro, Nettlesworth; Mr. W. Mettam, Darnal; Mr. H. Morris, Lond.; Manchester Royal Infirmary, Secretary of; Messrs. F. Mundy, Gilbert and Co., Birmingham; Dr. W. L. Muir, Glasgow; Maltine Manufacturing Co., Lond.; Mr. J. Moore, West Meon; Mrs. Moorshead, Ambleside; Mr. J. McMurtrie, Glasgow.

N.—Mr. R. W. Nicholson, Ferndale; Newport (Mon.) Hospital, Secretary of; National Provident Institution, Lond., Secretary of; N. M. A.

O.—Mr. C. A. P. Osborne, Old Catton; O. B. T.

P.—Dr. H. W. Plant, Liverpool; Petol, Ltd., Cambridge.

R.—Messrs. Raines and Co., Yorks; Dr. F. W. H. Robson, Burscough-bridge; R. F. S.; R. B. M. B.

S.—Salford Corporation, Treasurer of; Dr. A. Stengel, Philadelphia, U.S.A.; Mr. J. F. Sheppard, Sandy; St. Mary, Islington (Parish of), Clerk of; Mr. B. T. Stanley, Lond.; Mr. W. P. Smart, Needham Market.

T.—Mr. H. Torney, Cowbridge; Dr. C. Bell Taylor, Nottingham; T. M.; T. L.; T. J. C.

V.—Mr. W. Van Praagh, Lond.; Mr. D. H. Vickery, Saxbbereen.

W.—Mr. A. O. Way, Amersham; Messrs. O. Wallis and Co., Lond.; Warneford Asylum, Oxford, Secretary of; West Bromwich District Hospital, Secretary of; Mr. W. F. A. Walker, Dinas Mawddwy; Rev. A. W. Watson, Churt; W. M. B.; W. J. W.; Dr. T. O. Wood, Lond.; W. W. W.

Y.—Mr. J. Young, Lond.

Z.—Messrs. C. Zimmermann and Co., Lond.

EVERY FRIDAY. **THE LANCET.** PRICE SEVENPENCE.

SUBSCRIPTION, POST FREE.

FOR THE UNITED KINGDOM.		TO THE COLONIES AND ABROAD.	
One Year	£1 12 6	One Year	£1 14 8
Six Months	0 16 3	Six Months	0 17 4
Three Months	0 8 2	Three Months	0 8 8

Subscriptions (which may commence at any time) are payable in advance.

ADVERTISING.

Books and Publications ...	Seven Lines and under	£0 5 0
Official and General Announcements	Ditto	0 5 0
Trade and Miscellaneous Advertisements	Ditto	0 4 6
	Every additional Line	0 0 6

Quarter Page, £1 10s. Half a Page, £2 15s. An Entire Page, £5 5s

Terms for Position Pages and Serial Insertions on application.

An original and novel feature of "THE LANCET General Advertiser" is a Special Index to Advertisements on pages 2 and 4, which not only affords a ready means of finding any notice, but is in itself an *additional* advertisement.

Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

Answers are now received at this Office, by special arrangement, to advertisements appearing in THE LANCET.

The Manager cannot hold himself responsible for the return of testimonials, &c., sent to the Office in reply to Advertisements; copies only should be forwarded.

Cheques and Post Office Orders (crossed "London and Westminster Bank, Westminster Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Office, 423, Strand, London, to whom all letters relating to Advertisements or Subscriptions should be addressed.

THE LANCET can be obtained at all Messrs. W. H. Smith and Son's and other Railway Bookstalls throughout the United Kingdom Advertisements are also received by them and all other Advertising Agents.

Agent for the Advertisement Department in France—J. ASTIER, 31 Rue Bapts Asnières, Paris